CALERA CREEK FLOODWALLS AND ACCESS BRIDGE

ENGINEER'S REPORT

FEBRUARY 2001

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SANTA CLARA VALLEY WATER DISTRICT

CALERA CREEK

FLOODWALLS AND ACCESS BRIDGE

Engineer's Report

Project Number: 401802

Engineer's Report Prepared by

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Assistant Civil Engineer II

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Associate Civil Engineer

Under the Direction of

Gary Kawaoka
Unit Engineer
Structural/General Civil Engineering

FEBRUARY 2001

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R11535

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CHAPTER 1—INTRODUCTION AND SUMMARY

INTRODUCTION

This Engineer's Report discusses the proposed construction of floodwalls and a maintenance access bridge on Calera Creek located just downstream of the Union Pacific Railroad (UPRR) box culvert, in the City of Milpitas, California.

The purpose of this report is to analyze design alternatives and to formulate a recommended plan based on the results of previous studies, regulatory requirements, and engineering objectives.

This Engineer's Report complies with the requirement of Section 10 of the Santa Clara Valley Water District (District) Act, which requires that competent registered civil engineers prepare and file reports regarding a proposed project. These reports shall include: (1) a general description of the project; (2) a general description of the land, right of way, and easement; (3) maps showing affected lands; and (4) an estimate of the project cost and the method of financing. Consistent with these requirements, the Engineer's Report has been prepared which discusses project requirements, planning criteria, and alternatives considered.

Questions or comments about the proposed project are to be directed to the persons listed in Appendix C.

SUMMARY

The Calera Creek at UPRR project was initiated by the Coyote Watershed maintenance staff to replace the temporary shotcrete cover levee which serves as the missing tie-in, between Calera and Berryessa Creek levees/maintenance roads and to provide continuous access between the maintenance roads. Prior to initiating this project, the District investigated other alternatives to provide for maintenance crossing and to fill in the gap between the levees. Based on established planning and evaluation criteria, floodwalls and clear span maintenance bridge are recommended.

The recommended Calera Creek at UPRR project consists of 84 linear feet of floodwalls and a 42-foot clear span maintenance bridge. The floodwalls will be approximately 7 to 8 feet above the existing ground and will be tied to the outlet edge of the existing railroad box culvert. The floodwalls are in UPRR right of way and construction will require an easement from UPRR. The maintenance access bridge will be constructed using two District-owned railroad flat beds. Bridge abutments and wingwalls will be constructed on both sides of the creek and tie to the recommended floodwalls to seal the gap. The railroad flat beds will need to be modified as bridge support beams and be connected side by side to form a 19-foot bridge width.

The total project is estimated to cost $766,000 based on year 2001 prices. The estimated construction cost is $350,000. The project will be funded by Certificates of Participation (COP).

CHAPTER 2—PROJECT SITE AND BACKGROUND

PROJECT SITE LOCATION

The location of the proposed project is roughly 150 feet upstream of Calera Creek's confluence with Berryessa Creek, where the UPRR tracks cross Calera Creek, in the City of Milpitas, California (see Appendix E for project location). The project site is located behind residential houses with high sound walls and is not visible from local streets. Access is provided via a levee maintenance road off of California Circle, approximately 1 mile southeast of the Highway 880/Dixon Landing Road interchange. This site is within the Coyote Creek watershed.

PROJECT BACKGROUND

On February 3, 1998, a heavy flood occurred at the Berryessa and Calera Creeks confluence that affected the California Landing Development in Milpitas. This flood was equivalent to a 10-year flood event. The levees installed as part of the 1976 Berryessa Creek flood control project did not include the downstream end of the UPRR culvert. As a result of the 1998 flooding, it became apparent that 100-year flood protection from Berryessa and Calera Creeks for this area has not been provided. To minimize damages from another flood to the California Landing Development, the District maintenance forces installed emergency sandbag levees as a temporary tie-in until a permanent solution is installed. Several months later, to prolong the life of the sandbag levee until the permanent solution is installed, maintenance forces placed wiremesh over the sandbag levee and shotcreted over it.

This area of Calera Creek is a low salinity area affected by tidal waters from Coyote and Berryessa Creeks. Tidal flows delay downstream flows during high tides. During a site inspection in May 1998, several large mud and silt deposits were observed below the existing UPRR box culvert to the Calera and Berryessa Creek confluence. The existing sacked concrete slope protection (SCSP) on the south bank has moderate to major damage due to slope failure. Upper part of the existing SCSP also has slope stability failure. The toe of the existing SCSP embankment has been moved or slid toward the channel. The existing SCSP channel invert is covered with mud and silt deposits. Since the channel invert is covered with mud and silt, it is not known if the existing SCSP invert had settled, deformed, or displaced.

CHAPTER 3—PROJECT OBJECTIVES AND DESIGN CRITERIA

PROJECT OBJECTIVES

The objectives of this project are: (1) to provide 100-year flood protection with freeboard consistent with District policy and protect the California Landing Development in Milpitas from heavy floods; (2) to provide a maintenance crossing over Calera Creek, and (3) repair or replace the damaged SCSP at the downstream end of the UPRR box culvert. The maintenance crossing is needed to connect the Calera and Berryessa Creek maintenance roads to provide continuous access along Berryessa and Calera Creeks. By providing continuous access, maintenance will no longer be forced to back out along the maintenance road to exit.

DESIGN CRITERIA

A. Discharge Criteria

1. *Flow Rate at Ordinary High Water* (discharge at a 2.33-year event): $Q_{2.33}$ = 430 cubic feet per second (cfs), water surface elevation (WSE) = 7.0 feet.

2. *Design Flow Rate*: 1 percent flood discharge on Calera Creek at UPRR box culverts is 920 cfs with 1 percent WSE at 12.9 feet.

   From HEC-2 analysis of the 1 percent flood, the WSE at the project site could reach up to an elevation of 16.0 feet. This project is proposed to be designed using a 1 percent WSE of 16.0 feet.

3. *Groundwater and Tidal Water:* Groundwater is an important factor to be considered in design and during construction. The groundwater elevation is currently approximately between Elevation 5.0 to 6.0 feet. It fluctuates in conjunction with the back flow of tidal water from the Lower Penitencia Creek and Berryessa Creek. The channel invert varies from Elevation 3.0 to 3.5 feet.

B. Maintenance Bridge

1. *Maintenance Vehicle:* HS20 single truckload (one heavy truck at a time) or two lanes for 5-ton truck or cars. Traffic Index 5 with speed limit at 10 miles per hour.

2. Maximum grade for maintenance ramps is 15 percent.

3. *Pavement Design:* The maintenance road shall be surfaced with 4-inch compacted Class 2 aggregate over the existing levee or over compacted subbase of imported selected fill with a minimum soil bearing resistance (R-value) of 40. The roadway surface is designed as an unpaved road. Compaction for maintenance roads requires 92 percent relative compaction.

C. Floodwalls

With a design 1 percent WSE of 16.0 feet, the elevation of the top of proposed floodwall, including a 3-foot freeboard, shall be 19.0 feet.

CHAPTER 4—EVALUATION OF ALTERNATIVES TO MEET PROJECT OBJECTIVES

NO PROJECT ALTERNATIVE

The "No Project" alternative means no improvement to the site. Maintenance access over Calera Creek will not be addressed. The existing sandbag levee will remain in place as a permanent tie-in to provide for 100-year flood protection to the California Landing Development. However, the existing levee was constructed only as a temporary tie-in until a permanent solution is installed. The temporary levee only has about 1 inch of shotcrete cover and it was installed on an unprepared soil surface and without a levee key foundation to hold the levee in place. The existing shotcrete cover levee was not designed to structural standards to provide a permanent solution to protect the California Landing Development and adjacent properties from future heavy floods. Therefore, the "No Project" alternative does not meet project objectives and is eliminated from further consideration.

ALTERNATIVES

Several potential alternatives were evaluated to meet the project objectives.

Alternative 1—Double Box Culvert Extension

This alternative proposes to extend the existing UPRR double box culvert by approximately 70 feet on the downstream end and then construct a levee/maintenance road on top of the box culvert extension to connect the Calera and Berryessa Creek levees/maintenance roads to provide continuous access.

This alternative results in the removal of a portion of existing wetlands. This will likely require a U.S. Army Corps of Engineers (Corps) individual permit, which takes approximately a year to process, and will result in an 8-month delay to start of construction. Approximately a quarter of the proposed box culvert extension will be in UPRR right of way and will need to be designed per UPRR regulations. This will require extensive coordination with UPRR for permits/agreements. This alternative will require extensive design work, major channel excavation, and foundation preparation in the channel invert. The estimated total project cost for this alternative is $1,030,000. The estimated construction cost is $500,000. See Appendix A for alternative cost estimates.

Alternative 2—Simple Span Bridge

This alternative consists of constructing a 20-foot span bridge, matching the width of the existing box culvert. Two abutments and its footings will be constructed at the existing channel toes. Floodwalls shall be installed on the downstream edge of the existing UPRR box culvert and tie to the proposed bridge abutment wingwalls. The Calera and Berryessa creek levees/maintenance roads shall be extended to conform to the proposed bridge roadway and also butt against the floodwalls to seal the gap.

This alternative requires extensive design work, channel excavation, and pier foundation preparation in the channel invert. The pier foundation work in the creek may require a Corps individual permit which may delay the project because of the lengthy processing time. Floodwalls installed in the

UPRR right of way will require an easement from UPRR. The estimated total project cost for this alternative is $835,000. The estimated construction cost is $365,000. See Appendix A for alternative cost estimates.

Alternative 3—42-Foot Clear Span Bridge

This alternative is similar to Alternative 2 except with a 42-foot clear span bridge. With a longer clear span bridge, the channel will be widened to accommodate a side slope of 0.5:1 to 1:1, and the abutment and its footing will be constructed outside the channel. The floodwalls and abutment wingwalls will be installed similar to Alternative 2. The longer clear span bridge does not require channel excavation nor foundation preparation in the channel invert. Therefore, a Corps individual permit will not be required. However, a Corps Nationwide Permit will be required for minor work in the creek. The processing time of a Nationwide Permit is less than half the time it takes to process a Corps individual permit.

The construction cost of a clear span bridge can be reduced by using railroad flat beds as bridge beam supports. The District has two of these railroad flat beds located at the Coyote Pumping Station facility in the City of Morgan Hill. The estimated project cost for this alternative is $766,000. The estimated construction cost is $350,000. See Appendix A for alternative cost estimates.

CHANNEL PROTECTION

The existing SCSP was designed as a transitional channel wingwall from the vertical walls at the UPRR box culvert to the existing earth channel side slope of 1.5 to 1. The SCSP was needed to protect the UPRR box culvert from scour and to protect against bank erosion at the box culvert outlet. The existing SCSP is currently in poor condition. The SCSP on the south bank has major damage due to slope failure and in other areas the toe of the SCSP embankment has moved or slid toward the channel. The major cause of the failure was that the SCSP structure was installed without a cut-off wall or foundation to stabilize the SCSP. Also, the soil was not compacted well and has a low sliding resistance which is not suitable for steep slope walls.

If these damaged areas are repaired, the same failures will likely occur again because the SCSP does not have a cut-off wall. Therefore, all existing SCSP on the channel bank will be removed and new SCSP will be installed with lower side slopes and cut-off walls. The existing SCSP in the channel bottom will remain in place and, if needed, will be overlain with new SCSP to meet proposed channel invert grade.

Presto Geoweb Cellular Confinement System (Geoweb) was also evaluated as another channel slope protection option. Geoweb is an expandable, polyethylene, honeycomb-like cellular structure filled with either concrete or topsoil. It requires a firm soil backing and installation of a nonwoven geotextile fabric prior to placing the Geoweb. Using Geoweb on this project will require the removal of the existing SCSP on the channel bottom and major soil preparation in the channel invert. The soil preparation is required because the existing weak soil in the channel is not suitable for Geoweb installation. This work will require a longer construction period and cost more to construct than SCSP.

Geoweb with topsoil is designed for side slope of 1.5:1 or flatter. It may not support the lateral earth pressure if side slope is greater than 1.5:1. Alternative 2—Simple Span Bridge has vertical channel bank, therefore Geoweb is not applicable. Alternative 3—42-Foot Clear Span Bridge, proposed to widen the channel width to allow for a channel bank side slope of 0.5:1 to 1:1. Since the side slope is not 1.5:1 or flatter, Geoweb with topsoil is not applicable.

Any proposals to widen the channel width further to allow for a side slope of 1.5:1 to accommodate the Geoweb material would require a bridge longer than Alternative 3, resulting in a two-span bridge. A two-span bridge with a wider channel width would require longer floodwalls in UPRR right of way and requires a single pier be placed in the middle of the creek. The pier would require channel excavation and pier foundation preparation in the channel invert. This work will require a Corps individual permit. The pier would obstruct the waterway and may lead to more mud and silt buildup. The construction cost of a two-span bridge is greater than all three of the alternatives. It is recommended not to widen the channel further than what is proposed in Alternative 3.

CHAPTER 5—RECOMMENDED PROJECT

The recommended project must meet the project objectives of providing 100-year flood protection with freeboard consistent with District policy and protecting the California Landing Development in Milpitas from flooding damages and providing a maintenance crossing over Calera Creek; to minimize project costs; environmental impacts; and to minimize impacts to schedules. Based on these criteria, all three alternatives meet the project objectives. However, from Table 5-1, Alternative Comparison Summary, Alternative 3—42-Foot Clear Span Bridge is more favorable because it is less expensive to construct, results in less environmental impact to the project, and impacts the project schedule the least. For these reasons, Alternative 3—Clear Span Bridge is the recommended project.

TABLE 5-1
Alternative Comparison Summary

Alternatives	1% Flood Protection	Estimated Permanent Wetland Impact	Permit Requirement	Estimated Construction Start Date	Estimated Construction Cost	Estimated Total Project Cost
No Project	Flooding remains	NA	NA	NA	NA	NA
Alternative 1 RCB Extension	Provides protection to 1%	1,540 SF	Corps 404, CDFG 1601, RWQCB 401, UPRR	June 2002	$500,000	$1,030,000
Alternative 2 Simple Span Bridge	Provides protection to 1%	550 SF	Corps 404, CDFG 1601, RWQCB 401, UPRR	June 2002	$365,000	$835,000
Alternative 3 42-Foot Clear Span Bridge	Provides protection to 1%	356 SF	Corps Nationwide, CDFG 1601, RWQCB 401, UPRR	June 2001	$350,000	$766,000

DESCRIPTION RECOMMENDED PROJECT

The map and general plans are contained in Appendix D.

Construct Clear Span Bridge

The clear span bridge will be 42 feet long by 19 feet wide and consist of two railroad flat beds. The flat beds will be cleaned, modified with stiffener plates to strengthen the support beam to meet H20 (20 tons) truckload, and painted at the Coyote Pumping Station in the City of Morgan Hill prior to asphalt concrete will be installed on the bridge deck surface. Once the bridge is erected, metal railing will be installed along the edge of the bridge for safety.

Construct Floodwalls

The temporary sandbag levee will be removed and concrete floodwalls will be constructed at the downstream end of the UPRR box culvert. The new floodwalls will consist of a 44-foot long floodwall/headwall at the edge of the UPRR box culvert with two 20-foot long floodwall extensions at both ends of the headwall connecting to the bridge abutment wingwalls. The total length of the floodwalls will be 84 feet. The top of floodwall shall be at Elevation 19.0 feet approximately 7 to 8 feet above existing ground elevation. Chain link fence shall be installed on top of the two 20-foot long floodwall extensions for safety.

Levee Extension

Once the bridge and floodwalls are constructed, the Calera and Berryessa Creek levees/maintenance roads will be extended and will conform to the bridge roadway. The levee side slope on the upstream side will butt against the floodwall extensions. This will seal the gap between the levees and will provide continuous maintenance access over Calera Creek.

Replace/Repair Sacked Concrete Slope Protection

The existing SCSP on both banks will be removed. SCSP keys will be installed and tied to the existing SCSP on the channel invert. New SCSP with a lower side slope will be installed and tied to the new keys to prevent the SCSP toe from sliding. The existing SCSP on the channel bottom will remain in place and, if needed, new SCSP will be overlaid to meet the proposed channel invert grade.

CHAPTER 6—ESTIMATED COSTS, FINANCING, AND SCHEDULE

Based on year 2001 prices, the estimated project costs for the recommended project are presented in Table 6-1. The anticipated total project cost, including project management, planning, engineering and design, environmental review, clearance, permits, construction easement, inspection and contract administration, and construction is estimated to be $766,000. This project cost will be met from proceeds of Certificate of Participation that were issued in year 2000 for East Zone capital projects. The schedule is shown in Table 6-2.

TABLE 6-1
Estimated Project Cost
(2000 Dollars)

Item	Cost ($)
Project Management	21,000
Planning	30,000
Engineering and Design	160,000
Environmental review, clearance, and permits	75,000
Construction Easement	15,000
Inspection and Contract Administration	115,000
Construction	350,000
TOTAL PROJECT COST	766,000

TABLE 6-2
Preliminary Schedule

Planning	Complete in May 2001
Environmental Review and Permits	Complete in May 2001
Design	Complete in May 2001
Construction	Complete in December 2001

APPENDIX A

Table A—Preliminary Construction Cost Estimates for Alternatives 1, 2, and 3

Table B—Preliminary Project Cost for Alternatives 1, 2, and 3

TABLE A
Calera Creek at UPRR
Preliminary Construction Cost Estimates for Alternatives 1, 2, and 3

Item	Description	Quantity	Unit	Cost	Alt. 1 Double RCB RCB	Alt. 2 Simple Span Bridge	Alt. 3 42-Foot Span Bridge
1	SWPPP		LS		$20,000	$15,000	$15,000
2	Mobilization		LS		$49,630	$36,059	$34,837
3	Clearing & Grubbing		LS		$37,222	$27,044	$26,128
4	Control of Water		LS		$24,815	$18,030	$17,419
5	Earthwork		LS		$70,000	$40,000	$30,000
6	Concrete Work (Floodwalls & Abutments)	35	CY	$550	$19,250		
		140	CY	$550		$77,000	
		105	CY	$550			$57,750
7	Double RCB Extension	150	CY	$1,250	$187,500		
8	Concrete Slab	30	CY	$1,000		$30,000	
9	Bridge Deck Retrofit (Railroad Flat Bed)		LS				$35,000
10	Concrete Piles	600	FT	$55		$33,000	
		720	FT	$55			$39,600
11	Sack Concrete Riprap	250	SY	$100	$25,000		
		300	SY	$100		$30,000	
		350	SY	$100			$35,000
12	Bridge Railing	44	LF	$100		$4,400	
		88	LF	$100			$8,800
13	Chain Link Fence	30	LF	$25		$750	$750
14	Vegetation		LS		$5,000	$5,000	$5,000
15	Maintenance Road Surfacing	165	CY	$50	$8,250	$8,250	$8,250
16	Contingence (10%)				$49,630	$36,059	$34,837
				Total	$496,296	$360,593	$348,370
				TOTAL (Rounded)	**$500,000**	**$365,000**	**$350,000**

2/21/01
Prel Cost Est.xls

TABLE B
Calera Creek @ UPRR
Preliminary Project Cost for Alternatives 1, 2, and 3

ITEM	No Project	Alternative 1	Aternative 2	Alternative 3
Project Management	N/A	30,000	30,000	21,000
Planning	N/A	30,000	30,000	30,000
Design	N/A	200,000	180,000	160,000
Environmental review, clearance, & permits	N/A	100,000	100,000	75,000
Land	N/A	30,000	15,000	15,000
Inspection and Contract Administration	N/A	140,000	115,000	115,000
Construction	N/A	500,000	365,000	350,000
TOTAL PROJECT COST	**N/A**	**1,030,000**	**835,000**	**766,000**

2/21/01
Prel Cost Est.xls

APPENDIX B
Reference Reports and Supporting Documentation

REFERENCE REPORTS AND SUPPORTING DOCUMENTATION

1. California Landing Flood Evaluation Report, Prepared by Schaaf and Wheeler Consulting Civil Engineers, February 1998.

2. Berryessa Creek HEC-2 Water Surface Profiles, Prepared by George S. Nolte and Associates, May 1992.

3. Soil Investigation for the Proposed SPRR Bridges over Berryessa Creek, Prepared by Woodward-Clyde Consultants, April 1995

4. Geotechnical Engineering Analysis Report, Berryessa Creek Levee, Prepared by Harza Engineering Company, May 1999

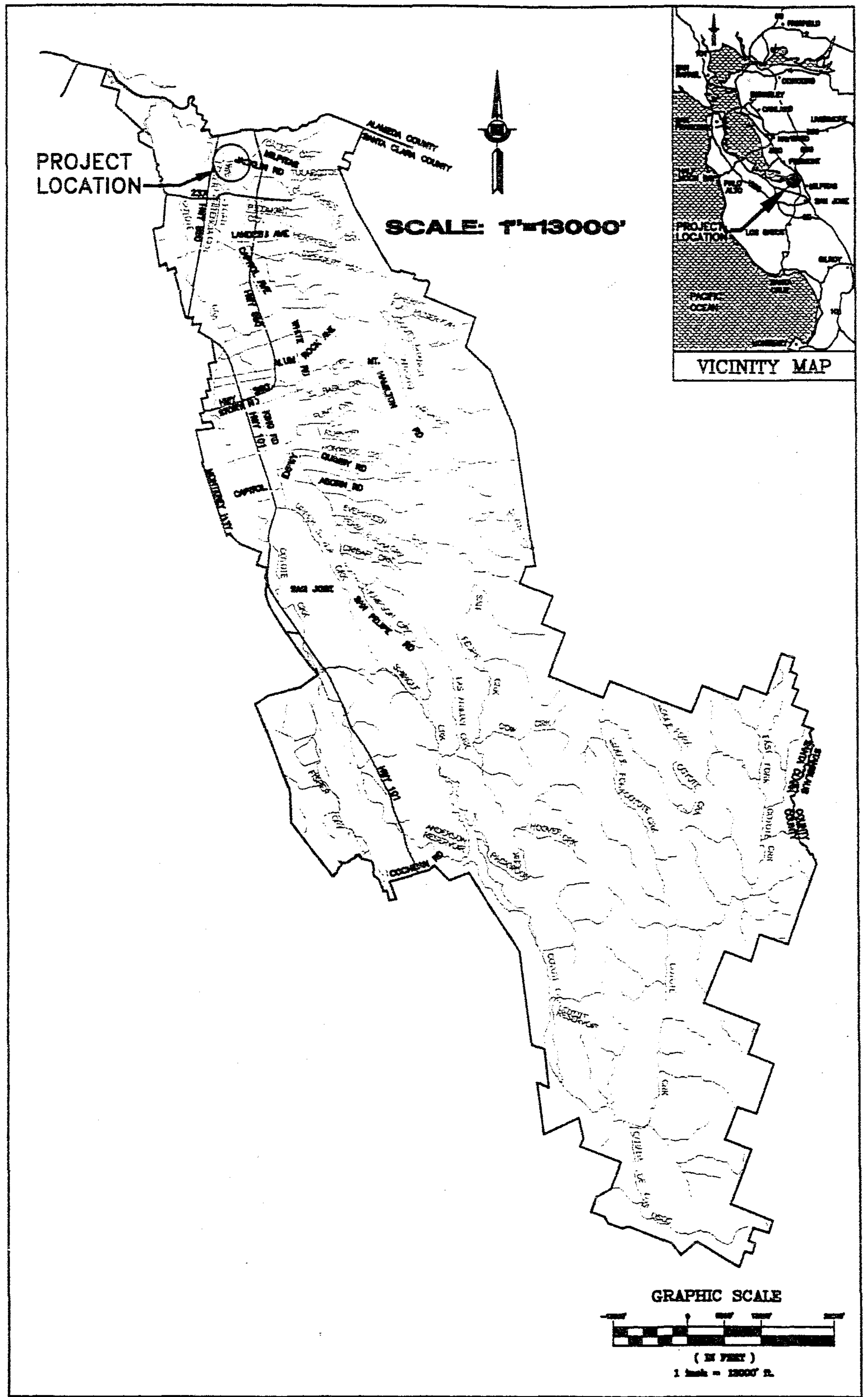
APPENDIX C
Persons to Contact for More Information

PERSONS TO CONTACT FOR MORE INFORMATION

ABOUT THE REPORT

Gordon Lau or Tri Nguyen
Santa Clara Valley Water District
(408) 265-2600

APPENDIX D
Map and Preliminary Construction Plans



LOCATION MAP

MAP AND CONSTRUCTION PLAN

FOR

CALERA CREEK

FROM UNION PACIFIC RAILROAD TO BERRYESSA CREEK CONFLUENCE

FLOODWALLS AND ACCESS BRIDGE

PROJECT NO. 401802

Santa Clara Valley Water District

EAST FLOOD CONTROL ZONE

INDEX

SHEET NO.	DESCRIPTION
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5	CALERA CREEK PROFILE
6	ACCESS ROAD PROFILE
8	PLAN AND SECTIONS
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16–17	CROSS SECTIONS "L" LINE
18	SURVEY LAYOUT
19	GRADING PLAN

PROJECT APPROVAL:

SENIOR PROJECT MANAGER

PROJECT DEVELOPMENT GROUP

DATE

CALERA CREEK FLOODWALLS AND ACCESS BRIDGE
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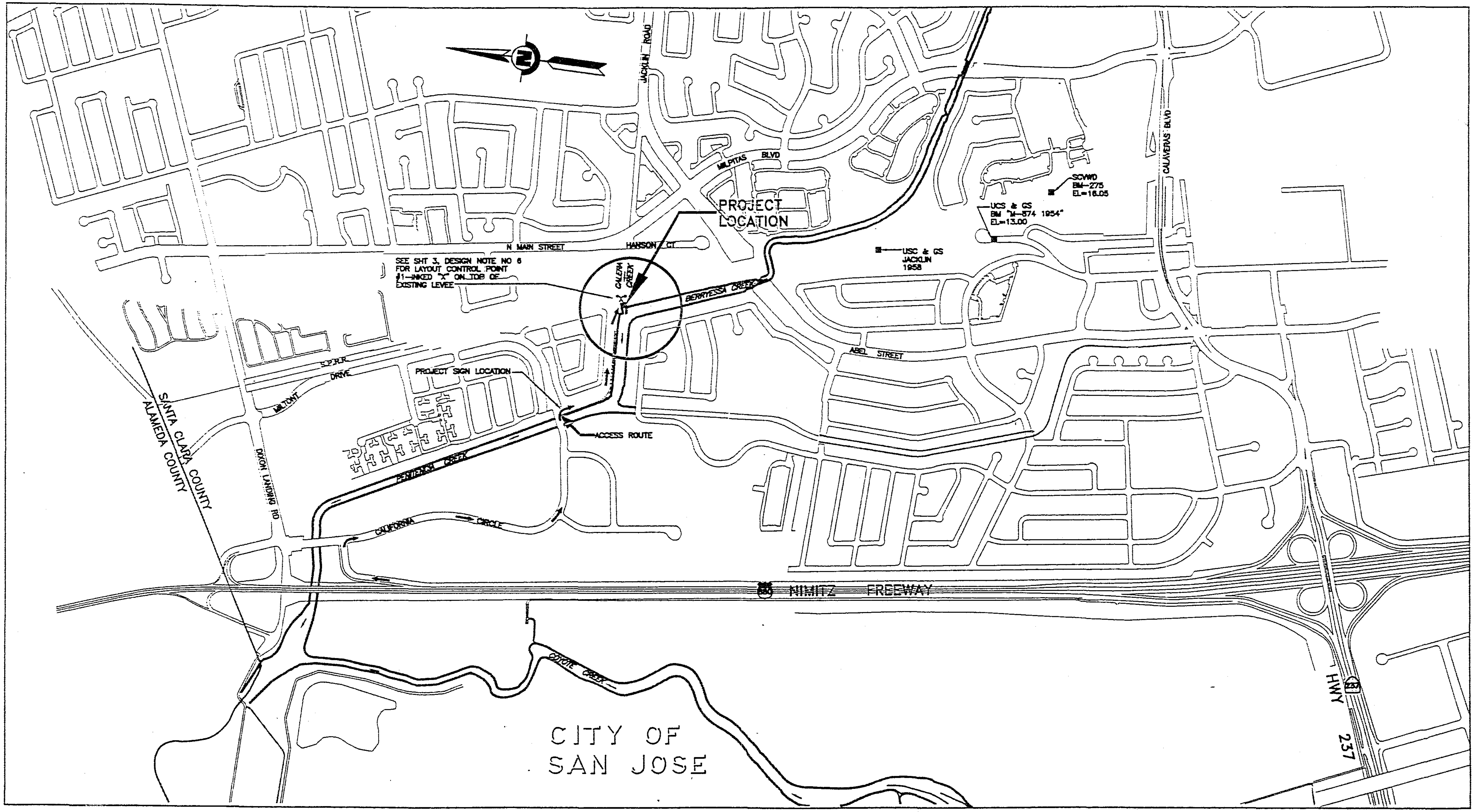


INDEX MAP

SCALE: 1" = 500'

GORDON M. LAU
No. C [illegible]
EXP. 6/30/02

Santa Clara Valley Water District

CALERA CREEK
CONSTRUCTION OF
FLOODWALLS AND ACCESS BRIDGE
INDEX MAP

GENERAL NOTES

1. All existing facilities, structures, trees, fences, landscaping, etc., designated "EXIST." or shown existing (dashed lines) are to remain. Only those specifically designated for removal as shown on the drawings, or as directed by the Engineer shall be removed.
2. All references made to RIGHT or LEFT and all cross-sections shown on the plans are viewed looking upstream.
3. Locations and depths of existing underground utilities as shown on the plans are based on information from the utility and are to be considered as approximate only.
4. Prior to performing any work in the vicinity of existing underground utilities, the contractor shall verify their locations and depths and take proper precautions to avoid any damage to them.
5. The contractor vehicles shall not park along the levee access road at any time. And construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to the residents.
6. The contractor shall install project sign, temporary fences and other warning signs or devices as shown on the drawings or as directed by the Engineer.
7. The contractor shall comply with the requirements at the State Water Resources Control Board for Storm Water Discharges associated with construction activities. NPDES general permit is not required.
8. See "APPENDIX D" of Specifications for the Geotechnical Report Data and Soils Borings.
9. Prior to beginning any work, the Contractor shall call UPRR at 1-800-336-9193 to determine if fiber optic cable is buried any where on the excavated sites.
10. The Contractor shall give reasonable notice to UPRR Representative before commencing any work at the construction site within 25 feet of any track at least 24 hours in advance. If any flag persons or other special protective or safety measures are performed by the Railroad shall be at the Contractor's expenses.
11. The Contractor's operations shall not infringe on the following minimum clearances from any railroad track: 10'-0" horizontally from center line of track and 23'-0" vertically above top of rail.

DESIGN NOTES

1. Discharge Criteria:

   A. 1% Flood Discharge at Calera Creek at UPRR box culverts or U/S of Berryessa Creek is 920 CFS.

   B. Berryessa Creek D/S of Calera Creek Q=5800 CFS. 1% water surface elevation (WSE) at the Calera Box Culvert =14.7 ft.

   C. The high tide water at the vicinity of Calera and Berryessa Creeks confluence is approximately at Elevation 5.0.

2. Mannings roughness coefficient (n) is as follows where applicable.

   A. Earth Channel = 0.050
   B. Concrete Channel = 0.013
   C. Rock Channel = 0.035
   D. Gabion Channel = 0.035
   E. Sacked Concrete = N/A
   F. Modified Flood Plain = N/A
   G. Existing Channel = 0.050
   H. Revegetation Areas = N/A

3. Unit stresses for reinforced concrete are as follows:
   A. Concrete fc' psi = 3,250 or as otherwise specified
   B. Steel fs psi = 60,000 or as otherwise specified

4. Basis of Elevation:
   The Basis Of Elevation For This Project:
   NGVD-1929 1988 Cross Valley Level Run By SCVWD
   BM-275 A Santa Clara Valley Water District Brass Disc On Top Of Concrete Bank Of Berryessa Creek Between UPRR & SPRR Tracks. Disc Is Located About 2' Downstream Of UPRR Bridge, On The Left (Looking Upstream) Concrete Bank Of Berryessa Creek.
   El=16.05'

   BM: M-874 A Brass Us Coast Guard And Geodetic Survey Brass Disc Stamp, "m-874 1954" Located 0.2 Mile North Along The Southern Pacific Company Railroad Track From The Milpitas Senior Center At Milpitas, About 2 1/2 Poles North Of Milpitas 40, About 11 Rails North Of The Crossing Of Railroad Ct. At Quadruple 60-inch Corrugated-Metal Pipe Culvert A-91+50 Under The Street, In The Top Of The North End Of The West Concrete Headwall, 66.4 Feet East Of The East Rail, 23.1 Feet West Of The Centerline Of The Street, And About 1/2 Foot Higher Than The Street.
   El=13.00'

5. Basis of Bearing:
   The Bearing N10°33'10"W Of The Tangent Portion Of The Monument Line Of Berryessa Street As Shown On The Tract Map No. 2545 Entitled "Curtner Estates" Filed In Book 117 Of Maps At Page 52 Santa Clara County Records Was Taken As N10°32'41"W For The Basis Of Bearings Shown On These Plans.

6. #1-inked "X" on top of existing concreted levee for U.P.R.R. at CALERA CREEK EL 15.86 N.G.V.D.
   N 1987953.2800, E 6152069.1800

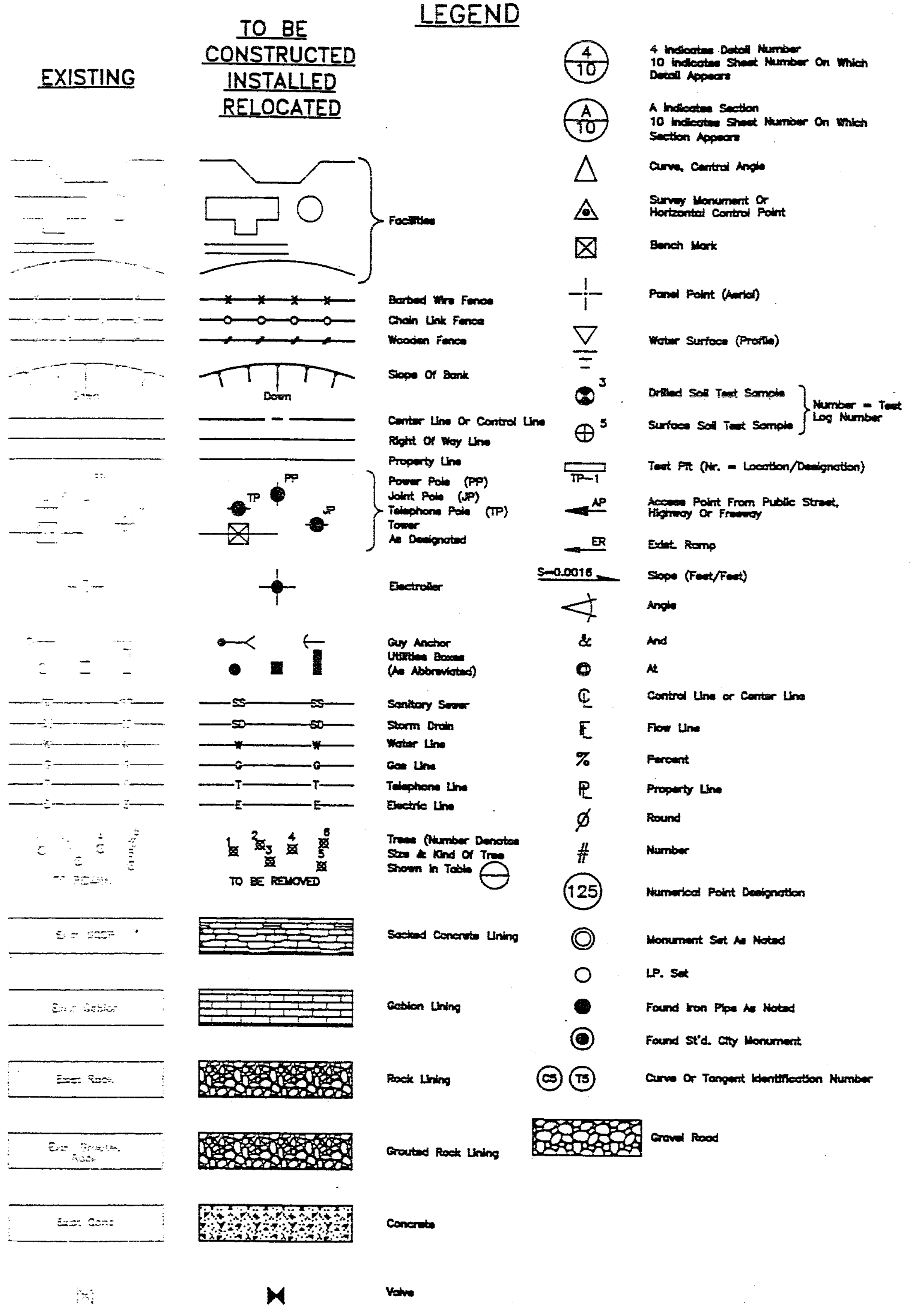
GENERAL ABBREVIATIONS

ALT	– Alternate (– Alternated)
AB	– Anchor Bolt, – Aggregate Base
AC	– Asphalt Concrete
ACI	– American Concrete Institute
ALIGN	– Alignment (– Align)
AMP	– Ampere
APPROX	– Approximate (– Approximately)
AVRG	– Average
ABUT	– Abutment
ASSY	– Assembly
ACP	– Asbestos Cement Pipe
ASPH	– Asphalt
AP	– Access Point
BC	– Begin Curve
BF	– Both Faces
BM	– Bench Mark
BRNG	– Bearing
BR	– Bridge
BW	– Barbed Wire
BK	– Bank
BLDG	– Building
BIT	– Bituminous
BOT	– Bottom
C	– Curve, – Chord
CB	– Catch Basin
CCP	– Concrete – Cylinder Pipe
CFM	– Cubic Feet Per Minute
CFS	– Cubic Feet Per Second
CIP	– Cast Iron Pipe
CJ	– Construction Joint
CLR	– Clear (– Clearance)
CL-6	– Chain Link Fence (Number = Height)
CM	– Centimeter
CMP	– Corrugated Metal Pipe
CONC	– Concrete
CONST	– Construct (construction)
CONT	– Continuous (– Control)
CY	– Cubic Yards
CYL	– Cylinder
COL	– Column
CRK	– Creek
DEG (°)	– Degrees
DI	– Drop Inlet
DIA	– Diameter
DIP	– Ductile Iron Pipe
DR	– Drive
D/S	– Downstream
DBL	– Double
DWG	– Drawing (– Drawings)
DWN	– Down
DET	– Detail
E	– East, Electric
EJ	– Expansion Joint
EA	– Each
EC	– End Curve
EL	– Elevation
ELECT	– Electric (Electrical)
ENGR	– Engineer (Engineering)
EP	– Edge Of Pavement
EXIST	– Existing
EXPWY	– Expressway
E'LY	– Easterly
EQU	– Equation
FD	– Found
FF	– Far Face
FG	– Finish Grade
FH	– Fire Hydrant
FT (')	– Feet (– Foot)
FTG	– Footing
FWY	– Freeway
FB	– Freeboard
G	– Gas
GA	– Gauge (Gage)
GAL	– Galvanize (Galvanized)
GB	– Guy Anchor And Pole
GB	– Grade Break
GFI	– Ground Fault Interrupter
GPM	– Gallons Per Minute
GPS	– Gallons Per Second
GR	– Grade
GRND	– Ground
GRP	– Group
GP	– Guy Pole
H	– Height
H&T	– Hub and Tack
HORIZ	– Horizontal
HP	– Horsepower, Hingepoint
HWY	– Highway
HK	– Hook (Applied to rebar)
I	– Irrigation
ID	– Inside Diameter (Dimension)
IF	– Inside Face
IN (")	– Inch (Inches)
INV	– Invert
IP	– Iron Pipe
JP	– Joint Pole
JT	– Joint
JUNCT	– Junction
K	– Kilo
Km	– Kilometer
KV	– Kilovolt
Kw	– Kilowatt
L	– Length (Long)
LN	– Lane
LT	– Left
LP	– Lip Of Gutter
M	– Meter
MAINT	– Maintenance
MAX	– Maximum
MFP	– Modified Flood Plain
MH	– Manhole
MIN	– Minimum
MON	– Monument
MATL	– Material(s)
MEMB	– Member
MTL	– Metal
NGVD	– National Geodetic Vertical Datum
N	– North
N/A	– Not Applicable,Not Available
NE	– Northeast
NE'LY	– Northeasterly
NF	– Near Face
NIC	– Not In Contract
NTS	– Not To Scale
NW	– Northwest
NW'LY	– Northwesterly
N'LY	– Northerly
OC	– On Center
OD	– Outside Diameter (Dimension)
OF	– Outside Face
OH	– Overhead
OPNG	– Opening
PB	– Pull Box
PCC	– Portland Cement Concrete Point Of Compound Curve
PI	– Point Of Intersection
POB	– Point Of Begining
POT	– Point Of Tangent
PP	– Power Pole
PRC	– Point Of Reverse Curve
PSI	– Pounds Per Square Inch
PT	– Point
PVC	– Polyvinyl Chloride (Pipe)
PVMT	– Pavement
PED	– Pedestrian
Q	– Design Discharge (cfs)
R	– Radius
RCB	– Reinforced Concrete Box
RCP	– Reinforced Concrete Pipe
RD	– Road
REINF	– Reinforcement (Reinforcing)
REQ'D	– Required
RT	– Right
RTE	– Route
RR	– Railroad
R/W	– Right Of Way
REF	– Reference (Refer)
S	– South, Slope
SCSP	– Sacked Concrete Slope Protection Sack Concrete Rip-Rap
SCH	– Schedule
SCVWD	– Santa Clara Valley Water District
SD	– Storm Drain, Standard Detail
SE	– Southeast
SEC (")	– Seconds
SECT	– Section
SE'LY	– Southeasterly
SHT	– Sheet
SPECS	– Specifications
SQ FT	– Square Feet
SS	– Sanitary Sewer
STA	– Station
STD	– Standard
STL	– Steel
STR	– Structure
SW'LY	– Southwesterly
SY	– Square Yards
SYM	– Symmetrical
SW	– Southwest
S'LY	– Southerly
T	– Tangent, Telephone
TBM	– Temporary Bench Mark
TC	– Top Of Curb
TCA	– Temporary Construction Area
TFC	– Traffic
TB	– Top Of Bank
TOC	– Toe Of Channel
TP	– Telephone Pole, Turning Point
TP-1	– Test Pit (Number=Designation/Location
TS	– Traffic Signal
TV	– Television (Cable Or Facility)
TW	– Top Of Wall
TYP	– Typical
UB	– Utility Box
UC	– Utility Conduit
UG	– Underground
U/S	– Upstream
USC&GS	– United States Coastal And Geodetic Survey
V	– Volts
VCP	– Vitrified Clay Pipe
VERT	– Vertical
W	– With, Water, West, Width, (Wide)
W/O	– Without
WS	– Water Surface
WT	– Weight
WD	– Wood (Wooden)
WSP	– Water Surface Profile
WV	– Water Valve
WW	– Wing Wall
WWF	– Welded Wire Fabric
W'LY	– Westerly
X-SECT	– Cross Section
Y	– Yards
Z	– Zone

SPECIAL ABBREVIATIONS

T&B	– Top and Bottom
EF	– Each Face
EW	– Each Way

LEGEND



Facilities
Barbed Wire Fence
Chain Link Fence
Wooden Fence
Slope Of Bank
Center Line Or Control Line
Right Of Way Line
Property Line
Power Pole (PP)
Joint Pole (JP)
Telephone Pole (TP)
Tower
As Designated
Electrolier
Guy Anchor
Utilities Boxes
(As Abbreviated)
Sanitary Sewer
Storm Drain
Water Line
Gas Line
Telephone Line
Electric Line
Trees (Number Denotes Size & Kind Of Tree Shown In Table ⊖
Sacked Concrete Lining
Gabion Lining
Rock Lining
Grouted Rock Lining
Concrete
Valve

4 Indicates Detail Number
10 Indicates Sheet Number On Which Detail Appears
A Indicates Section
10 Indicates Sheet Number On Which Section Appears
Curve, Central Angle
Survey Monument Or Horizontal Control Point
Bench Mark
Panel Point (Aerial)
Water Surface (Profile)
Drilled Soil Test Sample
Surface Soil Test Sample
Number = Test Log Number
Test Pit (Nr. = Location/Designation)
Access Point From Public Street, Highway Or Freeway
Exist. Ramp
Slope (Feet/Feet)
Angle
And
At
Control Line or Center Line
Flow Line
Percent
Property Line
Round
Number
Numerical Point Designation
Monument Set As Noted
I.P. Set
Found Iron Pipe As Noted
Found St'd. City Monument
Curve Or Tangent Identification Number
Gravel Road

REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES

REGISTERED PROFESSIONAL ENGINEER
GORDON M. LAU
No. C 45088
EXP. 6/30/02
CIVIL
STATE OF CALIFORNIA

DATE
07/25/2000
DESIGN
R. AGREDA
DRAWN
R. AGREDA
CHECKED
G. LAU

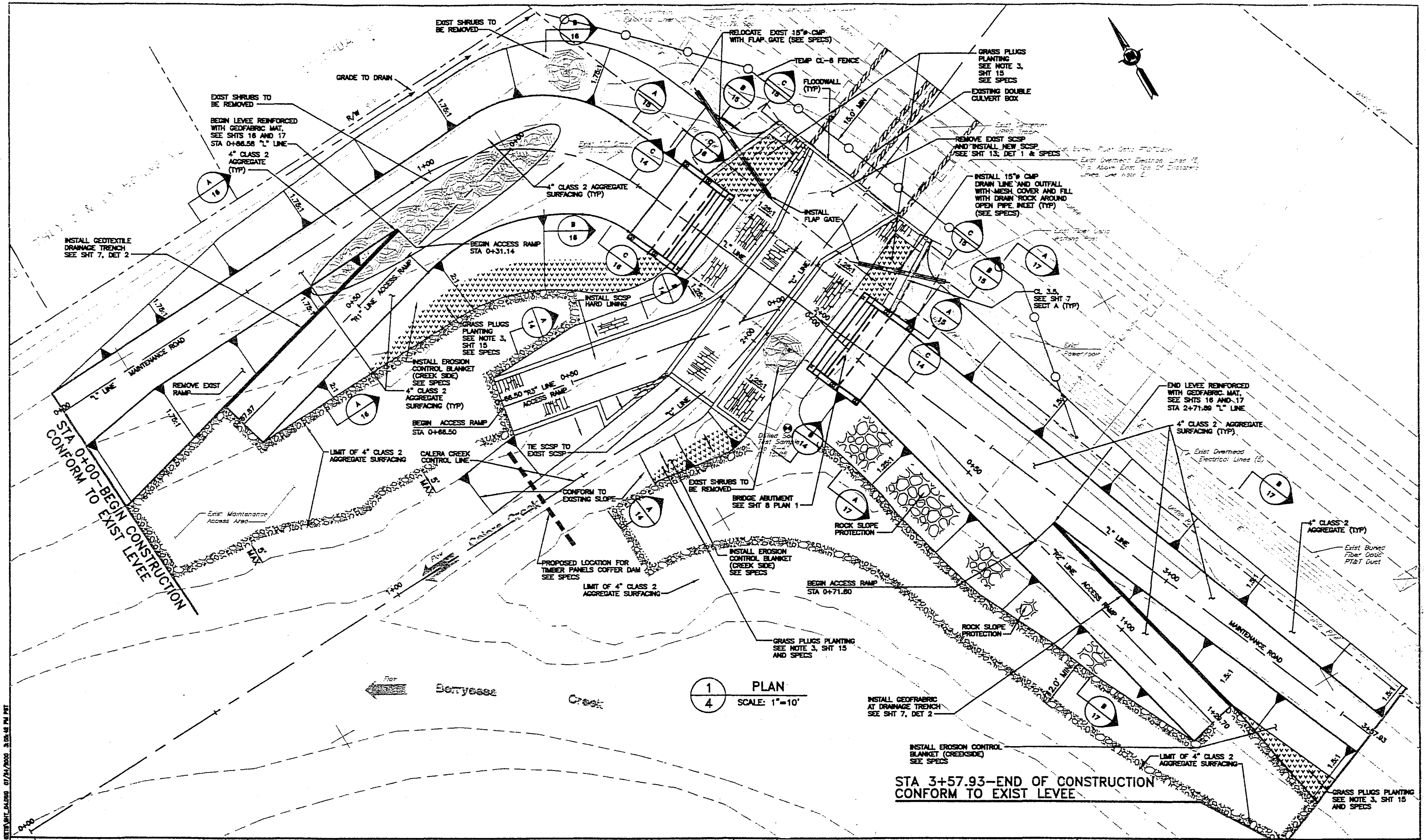
Santa Clara Valley Water District

ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF
FLOODWALLS AND ACCESS BRIDGE
GENERAL NOTES, ABBREVIATIONS,
AND LEGEND

SCALE
AS SHOWN
SHEET
3
OF 19


EXIST SHRUBS TO BE REMOVED
GRADE TO DRAIN
R/W
EXIST SHRUBS TO BE REMOVED
BEGIN LEVEE REINFORCED WITH GEOFABRIC MAT, SEE SHTS 16 AND 17 STA 0+86.58 "L" LINE
4" CLASS 2 AGGREGATE (TYP)
INSTALL GEOTEXTILE DRAINAGE TRENCH SEE SHT 7, DET 2
1.75:1
1+00
0+50
"R1" LINE ACCESS RAMP
BEGIN ACCESS RAMP STA 0+31.14
4" CLASS 2 AGGREGATE SURFACING (TYP)
RELOCATE EXIST 15"⌀ CMP WITH FLAP GATE (SEE SPECS)
TEMP CL-6 FENCE
FLOODWALL (TYP)
15.0' MIN
GRASS PLUGS PLANTING SEE NOTE 3, SHT 15 SEE SPECS
EXISTING DOUBLE CULVERT BOX
REMOVE EXIST SCSP AND INSTALL NEW SCSP SEE SHT 13, DET 1 & SPECS
INSTALL 15"⌀ CMP DRAIN LINE AND OUTFALL WITH MESH COVER AND FILL WITH DRAIN ROCK AROUND OPEN PIPE INLET (TYP) (SEE SPECS)
INSTALL FLAP GATE
CL 3.5, SEE SHT 7 SECT A (TYP)
Exist Powerpole
1.25:1
"L" LINE
"C" LINE
0+00
2+00
MAINTENANCE ROAD
"L" LINE
REMOVE EXIST RAMP
2:1
GRASS PLUGS PLANTING SEE NOTE 3, SHT 15 SEE SPECS
INSTALL EROSION CONTROL BLANKET (CREEK SIDE) SEE SPECS
4" CLASS 2 AGGREGATE SURFACING (TYP)
INSTALL SCSP HARD LINING
0+66.50 "R3" LINE ACCESS RAMP
BEGIN ACCESS RAMP STA 0+66.50
LIMIT OF 4" CLASS 2 AGGREGATE SURFACING
CALERA CREEK CONTROL LINE
TIE SCSP TO EXIST SCSP
CONFORM TO EXISTING SLOPE
5' MAX
Exist Maintenance Access Area
STA 0+00-BEGIN CONSTRUCTION CONFORM TO EXIST LEVEE
Flow
Calera Creek
PROPOSED LOCATION FOR TIMBER PANELS COFFER DAM SEE SPECS
LIMIT OF 4" CLASS 2 AGGREGATE SURFACING
EXIST SHRUBS TO BE REMOVED
BRIDGE ABUTMENT SEE SHT 8 PLAN 1
ROCK SLOPE PROTECTION
INSTALL EROSION CONTROL BLANKET (CREEK SIDE) SEE SPECS
GRASS PLUGS PLANTING SEE NOTE 3, SHT 15 AND SPECS
BEGIN ACCESS RAMP STA 0+71.60
END LEVEE REINFORCED WITH GEOFABRIC MAT, SEE SHTS 16 AND 17 STA 2+71.89 "L" LINE
4" CLASS 2 AGGREGATE SURFACING (TYP)
Exist Overhead Electrical Lines (5)
4" CLASS 2 AGGREGATE (TYP)
Exist Buried Fiber Optic PT&T Duct
"R2" LINE ACCESS RAMP
3+00
1.5:1
ROCK SLOPE PROTECTION
12.0' MIN
INSTALL GEOFRABRIC AT DRAINAGE TRENCH SEE SHT 7, DET 2
INSTALL EROSION CONTROL BLANKET (CREEKSIDE) SEE SPECS
LIMIT OF 4" CLASS 2 AGGREGATE SURFACING
1+29.70
3+57.93
STA 3+57.93-END OF CONSTRUCTION CONFORM TO EXIST LEVEE
GRASS PLUGS PLANTING SEE NOTE 3, SHT 15 AND SPECS
Flow
Berryessa Creek

$\frac{1}{4}$ PLAN

SCALE: 1"=10'

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. SEE SHT 5 FOR CALERA CREEK PROFILE
2. SEE SHT 6 FOR ACCESS ROAD PROFILE
3. SEE SHT 7 FOR SCSP, ABUTMENT AND FLOODWALL LAYOUT PLAN
4. SEE SHT 18 FOR LAYOUT PLAN
5. SEE SHT 19 FOR GRADING PLAN
6. LOW OVERHEAD POWER LINES. CONTRACTOR SHALL EXERCISE EXTREME CARE AND CAUTION WHEN WORKING UNDER OR ADJACENT TO THESE POWER LINES.
7. SEE SPECS, FOR PLYWOOD COFFER DAM AT EXIST DOUBLE CULVERT BOX ENTRANCE

GORDON M. LAU
No. C 40088
EXP. 6/30/02
CIVIL

DATE	07/25/2000
DESIGN	TRI NGUYEN
DRAWN	R. AGREDA
CHECKED	G. LAU

Santa Clara Valley Water District

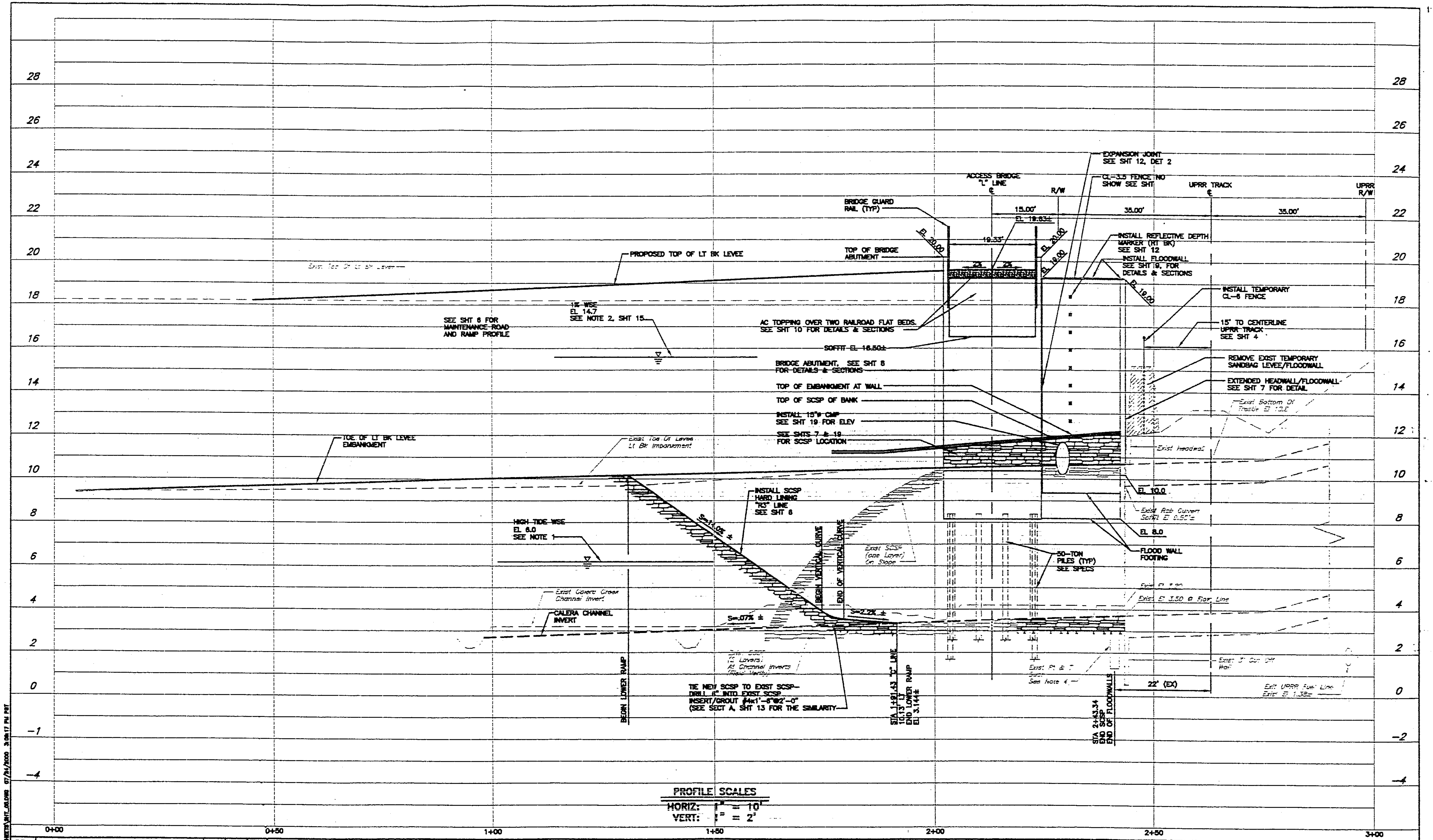
ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
CONSTRUCTION PLAN

SCALE 1"=10'

SHEET 4 OF 19


28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-1
-2
-4
EXPANSION JOINT SEE SHT 12, DET 2
CL-3.5 FENCE NO SHOW SEE SHT
ACCESS BRIDGE "L" LINE ℄
R/W
UPRR TRACK ℄
UPRR R/W
15.00'
35.00'
35.00'
EL 19.63±
BRIDGE GUARD RAIL (TYP)
EL 20.00
19.33'
EL 20.00
EL 19.00
2%
2%
TOP OF BRIDGE ABUTMENT
PROPOSED TOP OF LT BK LEVEE
Exist Top Of Lt Bk Levee
INSTALL REFLECTIVE DEPTH MARKER (RT BK) SEE SHT 12
INSTALL FLOODWALL SEE SHT 19, FOR DETAILS & SECTIONS
EL 19.00
INSTALL TEMPORARY CL-6 FENCE
15' TO CENTERLINE UPRR TRACK SEE SHT 4
1% WSE EL 14.7 SEE NOTE 2, SHT 15
SEE SHT 6 FOR MAINTENANCE ROAD AND RAMP PROFILE
AC TOPPING OVER TWO RAILROAD FLAT BEDS. SEE SHT 10 FOR DETAILS & SECTIONS
SOFFIT EL 16.50±
BRIDGE ABUTMENT, SEE SHT 8 FOR DETAILS & SECTIONS
REMOVE EXIST TEMPORARY SANDBAG LEVEE/FLOODWALL
EXTENDED HEADWALL/FLOODWALL SEE SHT 7 FOR DETAIL
TOP OF EMBANKMENT AT WALL
TOP OF SCSP OF BANK
Exist Bottom Of Trestle El 13.0
INSTALL 15"ø CMP SEE SHT 19 FOR ELEV
SEE SHTS 7 & 19 FOR SCSP LOCATION
TOE OF LT BK LEVEE EMBANKMENT
Exist Toe Of Levee Lt Bk Imbankment
Exist headwall
EL 10.0
INSTALL SCSP HARD LINING "R3" LINE SEE SHT 6
Exist Rcb Culvert Soffit El 9.50±
S=14.0% ±
HIGH TIDE WSE EL 6.0 SEE NOTE 1
EL 8.0
BEGIN VERTICAL CURVE
END OF VERTICAL CURVE
Exist SCSP (one Layer) On Slope
50-TON PILES (TYP) SEE SPECS
FLOOD WALL FOOTING
Exist Calera Creek Channel Invert
Exist El 3.50 @ Flow Line
CALERA CHANNEL INVERT
S=.07% ±
S=2.2% ±
Exist SCSP (2 Layers) At Channel Inverts (Field Verify)
Exist 3' Cut Off Wall
Exist Pt & T Duct See Note 4
22' (EX)
Exit UPRR Fuel Line Exist El 1.38±
TIE NEW SCSP TO EXIST SCSP-DRILL 6" INTO EXIST SCSP INSERT/GROUT #4x1'-6"@2'-0" (SEE SECT A, SHT 13 FOR THE SIMILARITY)
BEGIN LOWER RAMP
STA 1+91.43 "C" LINE 10.13' LT END LOWER RAMP EL 3.144±
STA 2+43.34 END SCSP END OF FLOODWALLS
PROFILE SCALES
HORIZ: 1" = 10'
VERT: 1" = 2'
0+00
0+50
1+00
1+50
2+00
2+50
3+00

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. ESTIMATED ORDINARY HIGH TIDE EL IS APPROX BETWEEN EL 5.0 AND EL 6.0 BASED ON SOIL BORINGS LOG AND FROM THE HIGH TIDE WATER ELEVATION.
2. FOR CONSTRUCTION PLAN SEE SHT 4.
3. FOR FLOODWALLS AND ACCESS BRIDGE SEE SHTS 7, 8, 9 AND 10.
4. FOR EXISTING DOUBLE BOX CULVERT AND UTILITIES LOCATIONS AT THE UPRR R/W, SEE CALERA CREEK AS-BUILT DRAWINGS.

GORDON M. LAU
No. C [illegible]
EXP. 6/30/02
CIVIL

DATE
07/25/2000
DESIGN
TRI NGUYEN
DRAWN
R. AGREDA
CHECKED
G. LAU

Santa Clara Valley Water District

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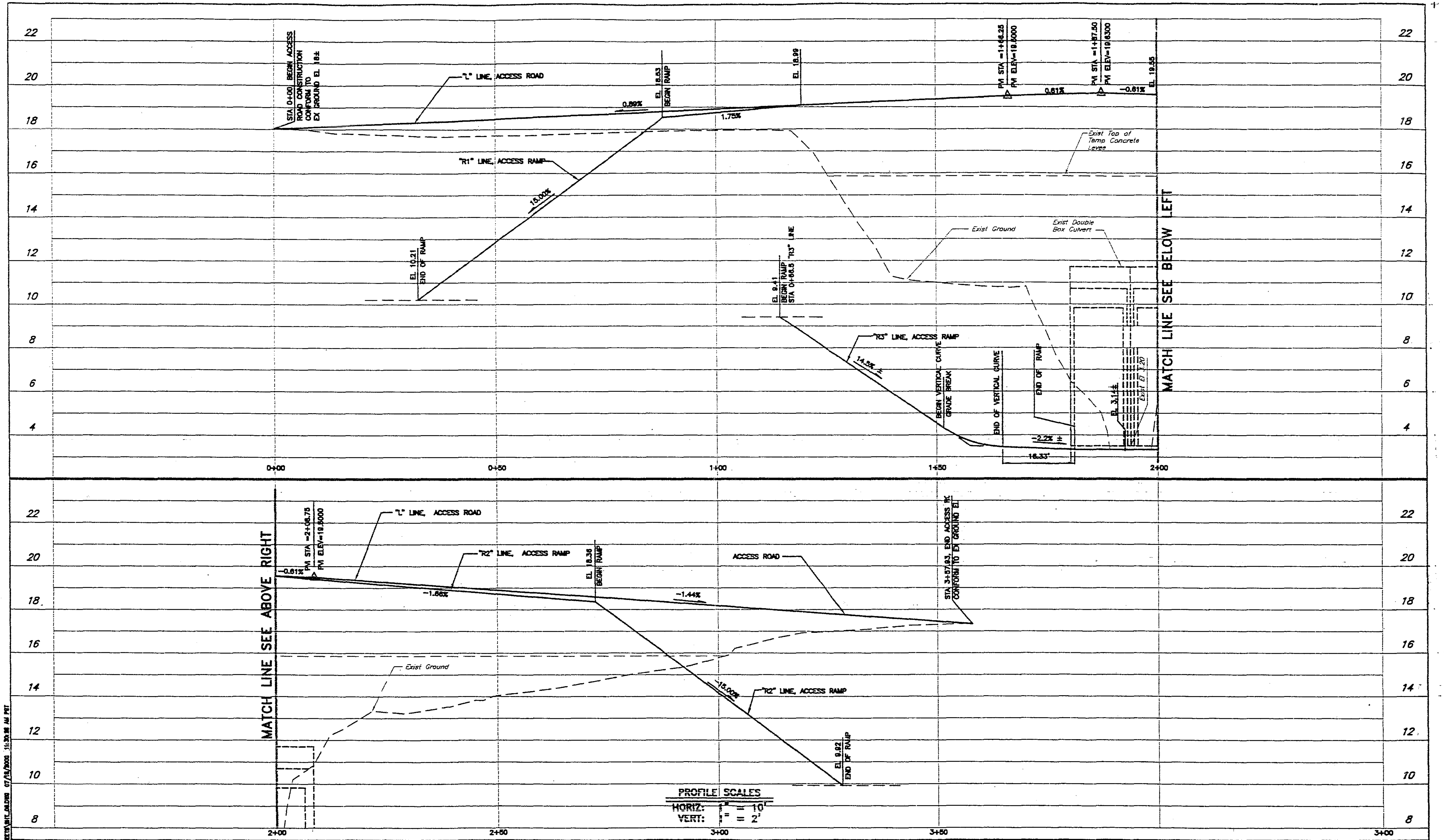
ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
CALERA CREEK PROFILE

SCALE
H:1"=10'
V:1"=2'

SHEET
5
OF 19



REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

DATE 07/25/2000
DESIGN TRI NGUYEN
DRAWN R. AGREDA
CHECKED G. LAU

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

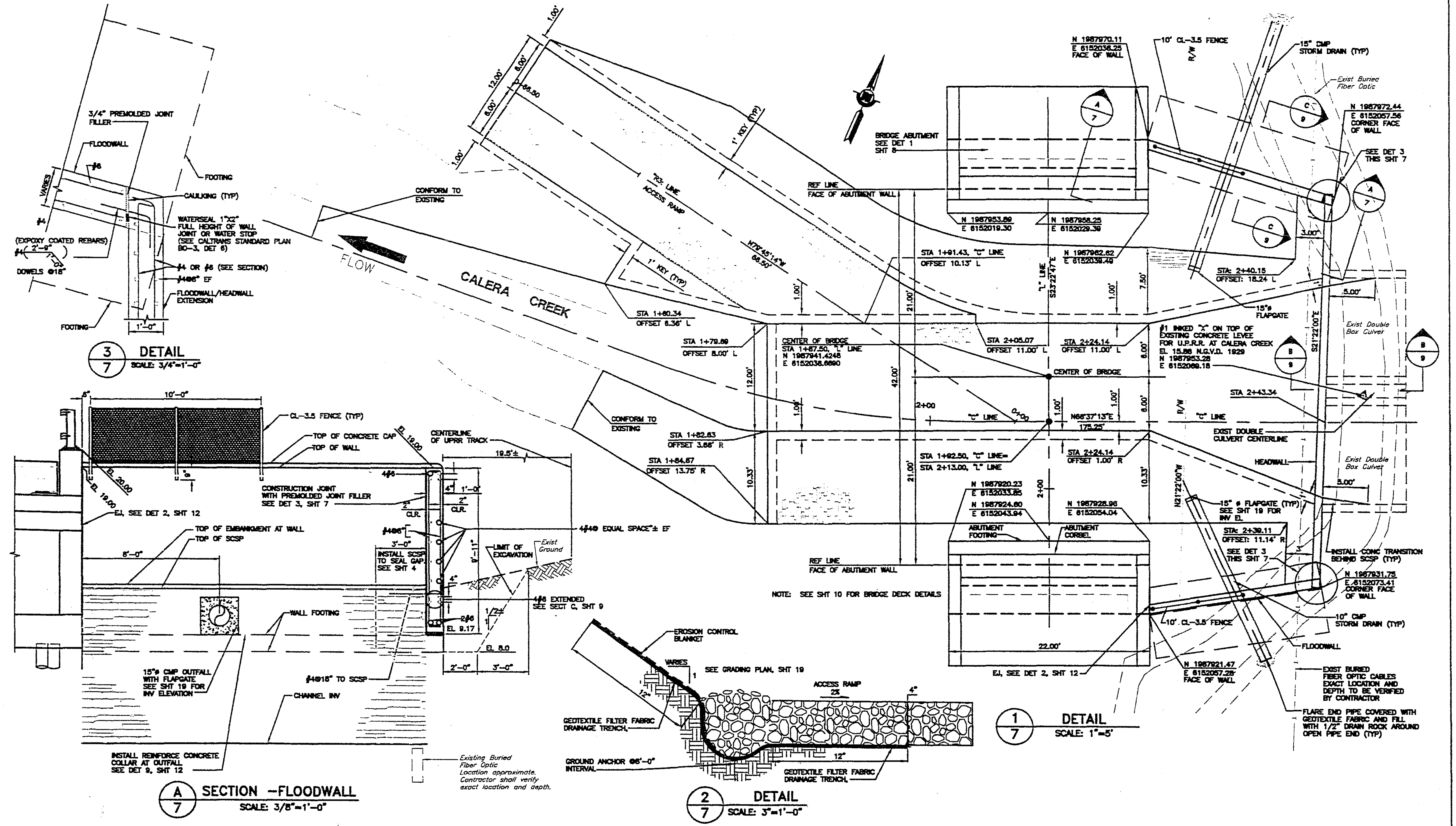
ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
ACCESS ROAD PROFILE

SCALE
H:1"=10'
V:1"=2'

SHEET
6
OF 19

No. C 40088
EXP. 6/30/02


3/4" PREMOLDED JOINT FILLER
FLOODWALL
#6
VARIES
#4
FOOTING
CAULKING (TYP)
WATERSEAL 1"X2" FULL HEIGHT OF WALL JOINT OR WATER STOP (SEE CALTRANS STANDARD PLAN B0-3, DET 6)
(EXPOXY COATED REBARS)
#4 (2'-9")
DOWELS @18"
#4 OR #6 (SEE SECTION)
#4@6" EF
FLOODWALL/HEADWALL EXTENSION
FOOTING
1'-0"
3/7 DETAIL
SCALE: 3/4"=1'-0"
1.00'
12.00'
6.00'
6.00'
86.50
1.00'
1' KEY (TYP)
"R3" LINE ACCESS RAMP
N78°45'14"W 86.50'
1' KEY (TYP)
CONFORM TO EXISTING
FLOW
CALERA CREEK
STA 1+80.34 OFFSET 6.36' L
STA 1+79.89 OFFSET 8.00' L
CONFORM TO EXISTING
STA 1+82.63 OFFSET 3.66' R
STA 1+84.67 OFFSET 13.75' R
BRIDGE ABUTMENT SEE DET 1 SHT 8
REF LINE FACE OF ABUTMENT WALL
N 1987953.89 E 6152019.30
N 1987958.25 E 6152029.39
N 1987970.11 E 6152036.25 FACE OF WALL
10' CL-3.5 FENCE
R/W
15" CMP STORM DRAIN (TYP)
Exist Buried Fiber Optic
A/7
C/9
N 1987972.44 E 6152057.56 CORNER FACE OF WALL
SEE DET 3 THIS SHT 7
A/7
C/9
3.00'
STA 1+91.43, "C" LINE OFFSET 10.13' L
N 1987962.62 E 6152039.49
"L" LINE S23°22'47"E
1.00'
7.50'
STA: 2+40.15 OFFSET: 18.24 L
5.00'
15"ø FLAPGATE
21.00'
1.00'
STA 2+05.07 OFFSET 11.00' L
STA 2+24.14 OFFSET 11.00' L
6.00'
#1 INKED "X" ON TOP OF EXISTING CONCRETE LEVEE FOR U.P.R.R. AT CALERA CREEK EL 15.86 N.G.V.D. 1929 N 1987953.28 E 6152069.18
S21°22'00"E
Exist Double Box Culvert
B/9
B/9
CENTER OF BRIDGE STA 1+87.50, "L" LINE N 1987941.4248 E 6152036.6690
12.00'
42.00'
CENTER OF BRIDGE
1.00'
2+00
"C" LINE
0+00
1.00'
N68°37'13"E 175.25'
1.00'
6.00'
R/W
"C" LINE
STA 2+43.34
EXIST DOUBLE CULVERT CENTERLINE
HEADWALL
Exist Double Box Culvert
5.00'
STA 1+92.50, "C" LINE= STA 2+13.00, "L" LINE
STA 2+24.14 OFFSET 1.00' R
10.33'
21.00'
2+00
10.33'
N 1987920.23 E 6152033.65
N 1987924.60 E 6152043.94
N 1987928.96 E 6152054.04
N21°22'00"W
15" ø FLAPGATE (TYP) SEE SHT 19 FOR INV EL
STA: 2+39.11 OFFSET: 11.14' R
SEE DET 3 THIS SHT 7
INSTALL CONC TRANSITION BEHIND SCSP (TYP)
ABUTMENT FOOTING
ABUTMENT CORBEL
REF LINE FACE OF ABUTMENT WALL
NOTE: SEE SHT 10 FOR BRIDGE DECK DETAILS
N 1987931.75 E 6152073.41 CORNER FACE OF WALL
10' CL-3.5 FENCE
10" CMP STORM DRAIN (TYP)
22.00'
FLOODWALL
EJ, SEE DET 2, SHT 12
N 1987921.47 E 6152057.28 FACE OF WALL
EXIST BURIED FIBER OPTIC CABLES EXACT LOCATION AND DEPTH TO BE VERIFIED BY CONTRACTOR
FLARE END PIPE COVERED WITH GEOTEXTILE FABRIC AND FILL WITH 1/2" DRAIN ROCK AROUND OPEN PIPE END (TYP)
1/7 DETAIL
SCALE: 1"=5'
6"
10'-0"
CL-3.5 FENCE (TYP)
TOP OF CONCRETE CAP
TOP OF WALL
EL 19.00
CENTERLINE OF UPRR TRACK
19.5'±
EL 20.00
EL 19.00
6"
4#6
4"
1'-0"
CONSTRUCTION JOINT WITH PREMOLDED JOINT FILLER SEE DET 3, SHT 7
2" CLR.
2" CLR.
EJ, SEE DET 2, SHT 12
TOP OF EMBANKMENT AT WALL
TOP OF SCSP
#4@6"
4#9 EQUAL SPACE"± EF
8'-0"
3'-0"
9'-11"
INSTALL SCSP TO SEAL GAP, SEE SHT 4
LIMIT OF EXCAVATION
Exist Ground
4"
WALL FOOTING
4#6 EXTENDED SEE SECT C, SHT 9
1/2±
1
2#6
EL 9.17
EL 8.0
2'-0"
3'-0"
15"ø CMP OUTFALL WITH FLAPGATE SEE SHT 19 FOR INV ELEVATION
#4@18" TO SCSP
CHANNEL INV
INSTALL REINFORCE CONCRETE COLLAR AT OUTFALL SEE DET 9, SHT 12
Existing Buried Fiber Optic Location approximate. Contractor shall verify exact location and depth.
A/7 SECTION -FLOODWALL
SCALE: 3/8"=1'-0"
EROSION CONTROL BLANKET
VARIES
1
SEE GRADING PLAN, SHT 19
12"
ACCESS RAMP 2%
4"
GEOTEXTILE FILTER FABRIC DRAINAGE TRENCH,
12"
GROUND ANCHOR @6'-0" INTERVAL
GEOTEXTILE FILTER FABRIC DRAINAGE TRENCH,
2/7 DETAIL
SCALE: 3"=1'-0"

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. FOR BRIDGE DECK DETAILS SEE SHT 10.

GORDON M. LAU
No. C 46089
EXP. 6/30/02

DATE 07/25/2000
DESIGN TRI NGUYEN
DRAWN R. AGREDA
CHECKED G. LAU

Santa Clara Valley Water District

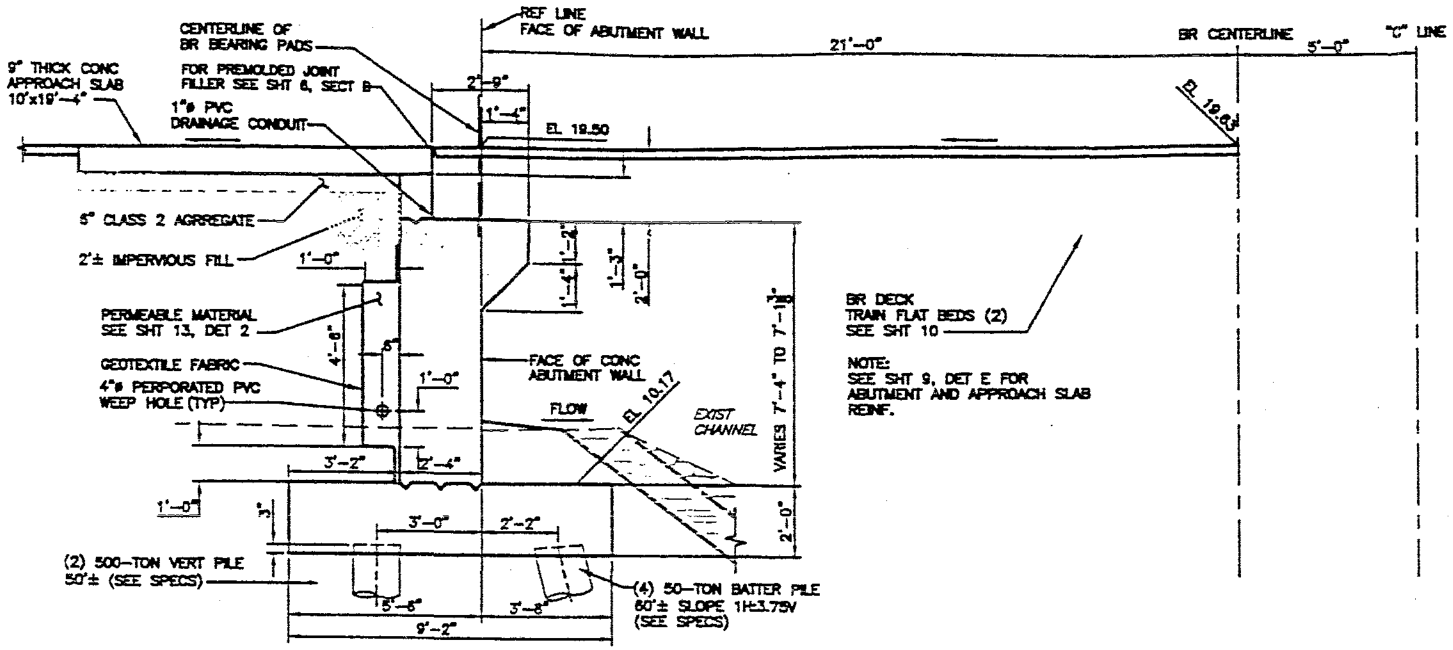
ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

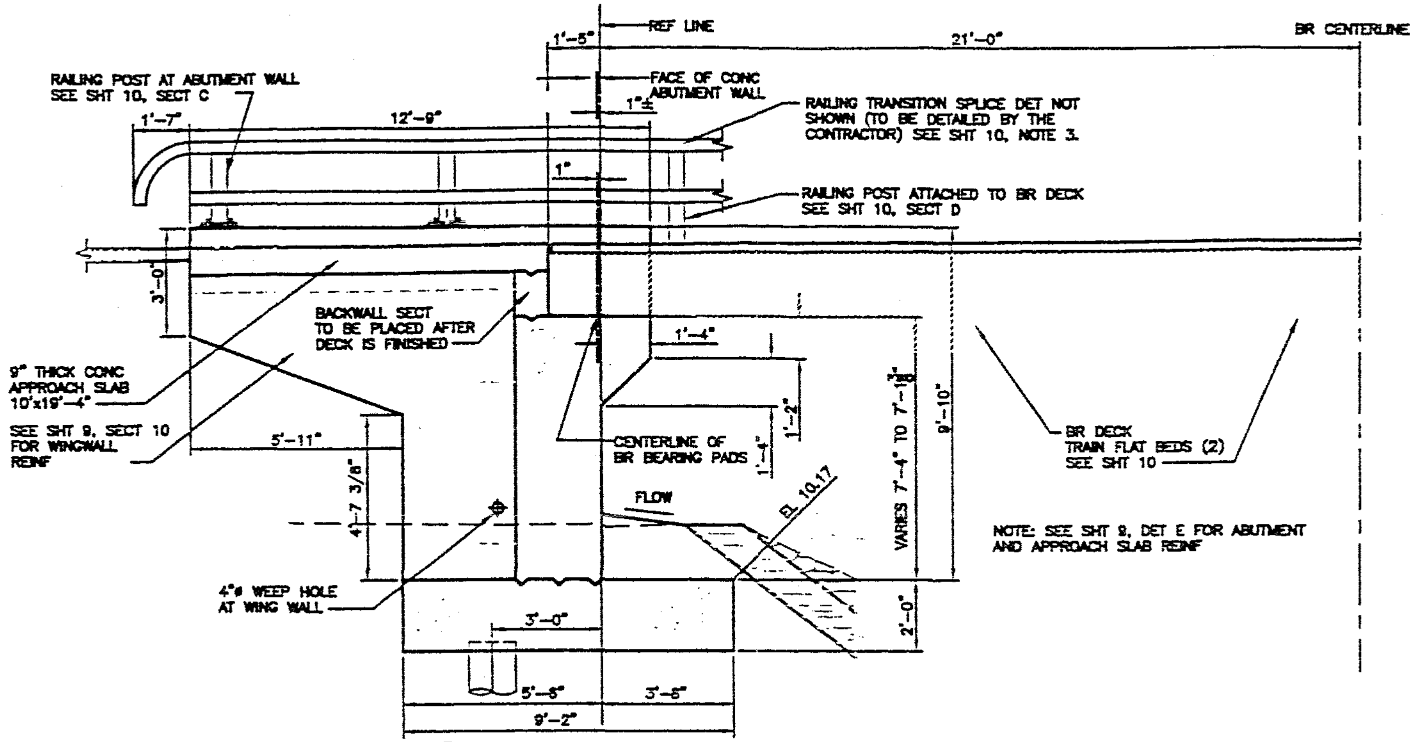
CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
SECTION AND DETAILS

SCALE H: 1"=5' V: 1"=5'

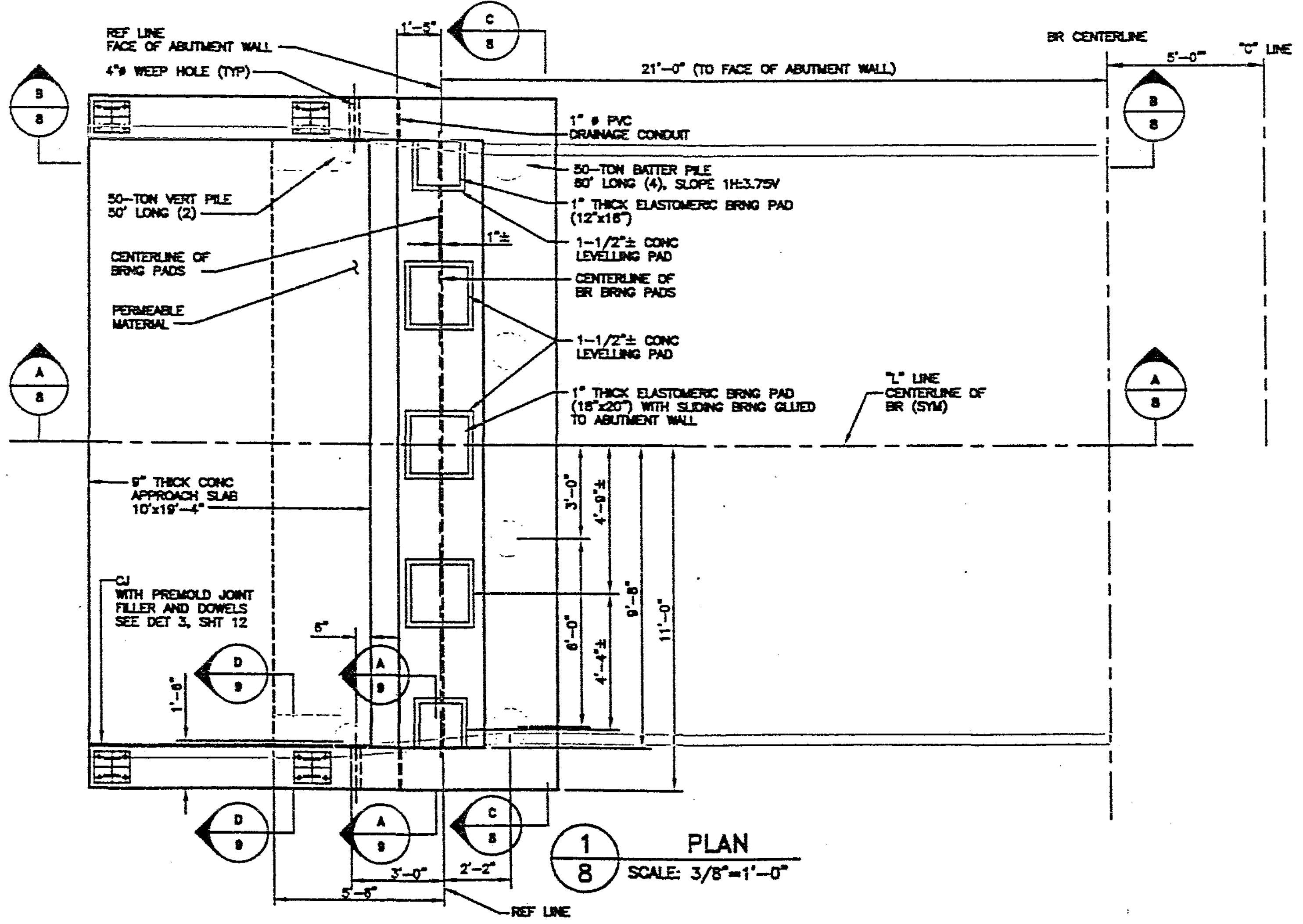
SHEET 7 OF 19


CENTERLINE OF BR BEARING PADS
REF LINE FACE OF ABUTMENT WALL
21'-0"
BR CENTERLINE
5'-0"
"C" LINE
9" THICK CONC APPROACH SLAB 10'x19'-4"
FOR PREMOLDED JOINT FILLER SEE SHT 6, SECT B
1"ø PVC DRAINAGE CONDUIT
2'-9"
1'-4"
EL 19.50
EL 19.63
5" CLASS 2 AGRREGATE
2'± IMPERVIOUS FILL
1'-0"
1'-2"
1'-4"
1'-3"
2'-0"
PERMEABLE MATERIAL SEE SHT 13, DET 2
4'-6"
GEOTEXTILE FABRIC
4"ø PERFORATED PVC WEEP HOLE (TYP)
FACE OF CONC ABUTMENT WALL
FLOW
EL 10.17
EXIST CHANNEL
VARIES 7'-4" TO 7'-1 7/8"
BR DECK TRAIN FLAT BEDS (2) SEE SHT 10
NOTE: SEE SHT 9, DET E FOR ABUTMENT AND APPROACH SLAB REINF.
3'-2"
2'-4"
3"
3'-0"
2'-2"
2'-0"
(2) 500-TON VERT PILE 50'± (SEE SPECS)
5'-6"
3'-8"
(4) 50-TON BATTER PILE 60'± SLOPE 1H:3.75V (SEE SPECS)
9'-2"

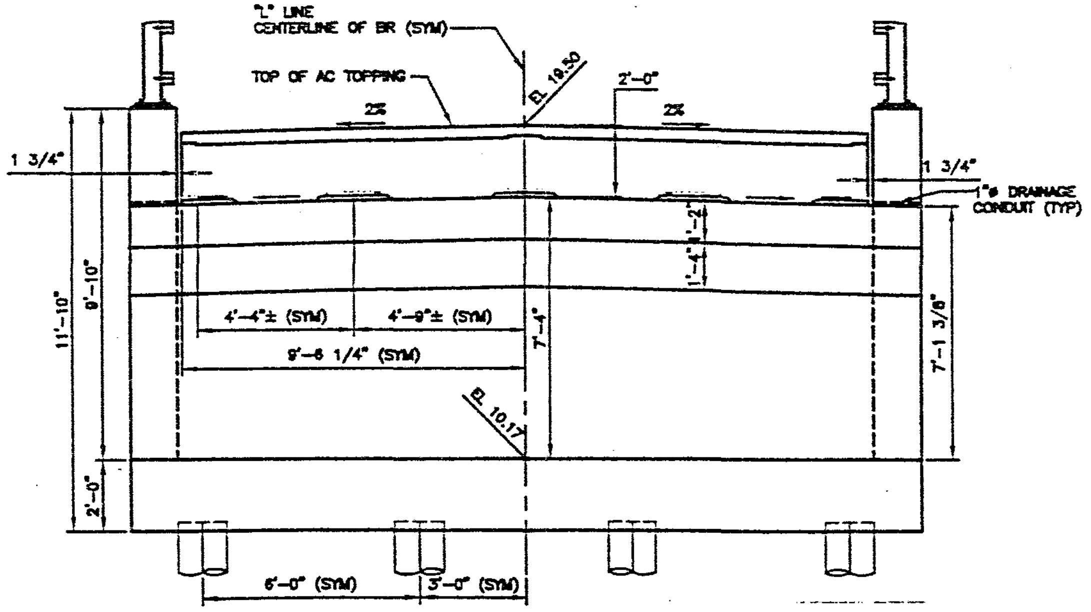
A
8
SECTION
SCALE: 3/8"=1'-0"


1'-5"
REF LINE
21'-0"
BR CENTERLINE
RAILING POST AT ABUTMENT WALL SEE SHT 10, SECT C
FACE OF CONC ABUTMENT WALL
1'-7"
12'-9"
RAILING TRANSITION SPLICE DET NOT SHOWN (TO BE DETAILED BY THE CONTRACTOR) SEE SHT 10, NOTE 3.
RAILING POST ATTACHED TO BR DECK SEE SHT 10, SECT D
3'-0"
BACKWALL SECT TO BE PLACED AFTER DECK IS FINISHED
1'-4"
9" THICK CONC APPROACH SLAB 10'x19'-4"
SEE SHT 9, SECT 10 FOR WINGWALL REINF
5'-11"
4'-7 3/8"
CENTERLINE OF BR BEARING PADS
1'-2"
1'-4"
VARIES 7'-4" TO 7'-1 7/8"
9'-10"
BR DECK TRAIN FLAT BEDS (2) SEE SHT 10
FLOW
EL 10.17
NOTE: SEE SHT 9, DET E FOR ABUTMENT AND APPROACH SLAB REINF
4"ø WEEP HOLE AT WING WALL
3'-0"
2'-0"
5'-6"
3'-6"
9'-2"

B
8
SECTION
SCALE: 3/8"=1'-0"


REF LINE FACE OF ABUTMENT WALL
1'-5"
C
8
BR CENTERLINE
5'-0"
"C" LINE
4"ø WEEP HOLE (TYP)
21'-0" (TO FACE OF ABUTMENT WALL)
B
8
1" ø PVC DRAINAGE CONDUIT
50-TON BATTER PILE 60' LONG (4), SLOPE 1H:3.75V
50-TON VERT PILE 50' LONG (2)
1" THICK ELASTOMERIC BRNG PAD (12"x16")
1"±
1-1/2"± CONC LEVELLING PAD
CENTERLINE OF BRNG PADS
CENTERLINE OF BR BRNG PADS
PERMEABLE MATERIAL
1-1/2"± CONC LEVELLING PAD
A
8
1" THICK ELASTOMERIC BRNG PAD (18"x20") WITH SLIDING BRNG GLUED TO ABUTMENT WALL
"L" LINE CENTERLINE OF BR (SYM)
9" THICK CONC APPROACH SLAB 10'x19'-4"
3'-0"
4'-9"±
9'-8"
11'-0"
6'-0"
4'-4"±
CJ WITH PREMOLD JOINT FILLER AND DOWELS SEE DET 3, SHT 12
6"
1'-6"
D
9
A
9
C
8
3'-0"
2'-2"
5'-6"
REF LINE

1
8
PLAN
SCALE: 3/8"=1'-0"



C
8
SECTION
SCALE: 3/8"=1'-0"

REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES

REGISTERED PROFESSIONAL ENGINEER
GORDON M. LAU
No. C 46088
EXP. 6/30/02
CIVIL
STATE OF CALIFORNIA

DATE	07/25/2000
DESIGN	TRI NGUYEN
DRAWN	R. AGREDA
CHECKED	G. LAU

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

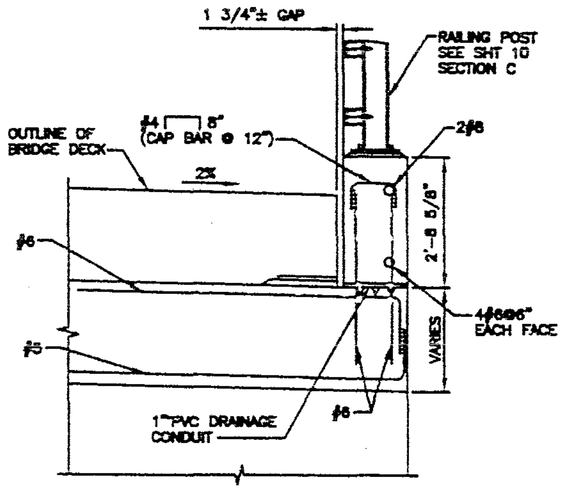
CALERA CREEK

CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE

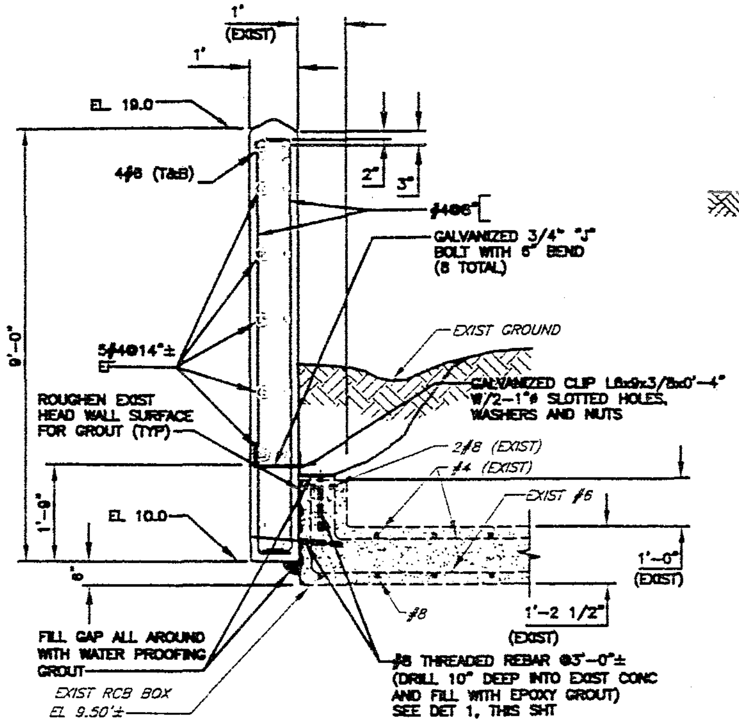
PLAN AND SECTIONS

SCALE
AS SHOWN

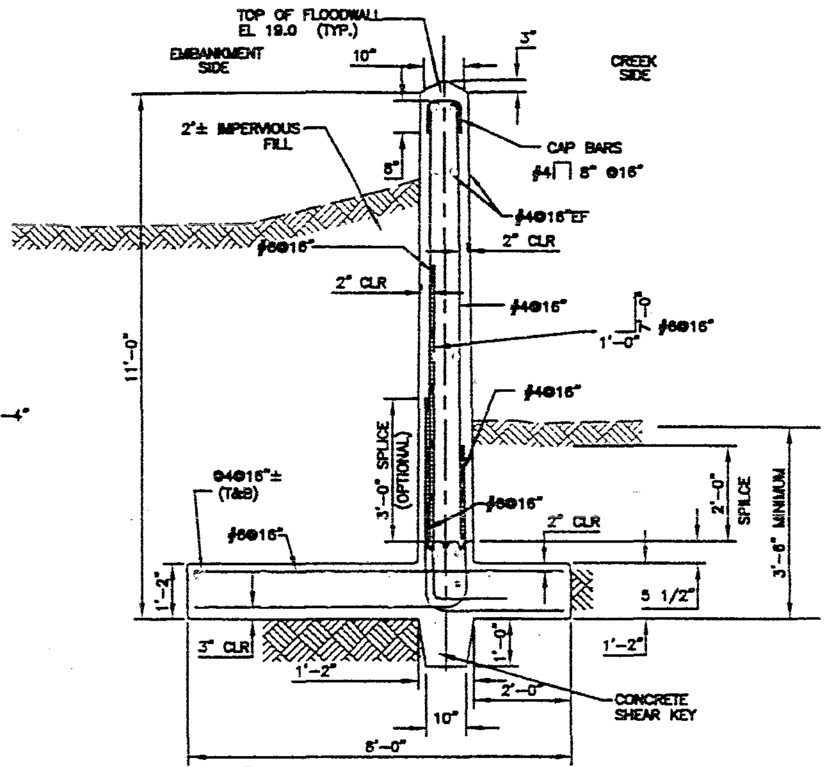
SHEET
8
OF 19



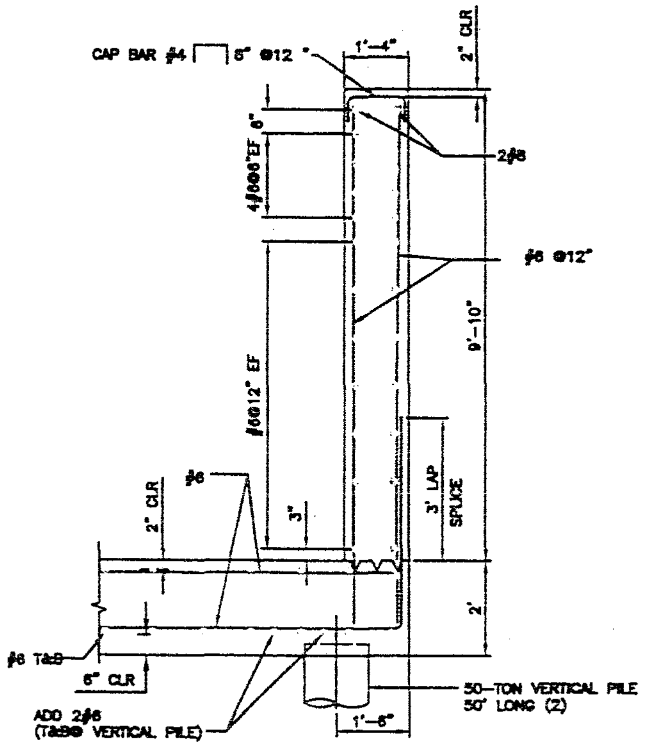
A
9
SECTION
SCALE: 1/2"=1'-0"


1' (EXIST)
1'
EL. 19.0
4#8 (T&B)
2"
3"
#4@6"
GALVANIZED 3/4" "J" BOLT WITH 6" BEND (8 TOTAL)
9'-0"
5#4@14"± EF
EXIST GROUND
GALVANIZED CLIP L6x9x3/8x0'-4" W/2-1"ø SLOTTED HOLES, WASHERS AND NUTS
ROUGHEN EXIST HEAD WALL SURFACE FOR GROUT (TYP)
2#8 (EXIST)
#4 (EXIST)
EXIST #6
1'-9"
EL. 10.0
6"
1'-0" (EXIST)
#8
1'-2 1/2" (EXIST)
FILL GAP ALL AROUND WITH WATER PROOFING GROUT
EXIST RCB BOX EL 9.50'±
#8 THREADED REBAR @3'-0"± (DRILL 10" DEEP INTO EXIST CONC AND FILL WITH EPOXY GROUT) SEE DET 1, THIS SHT

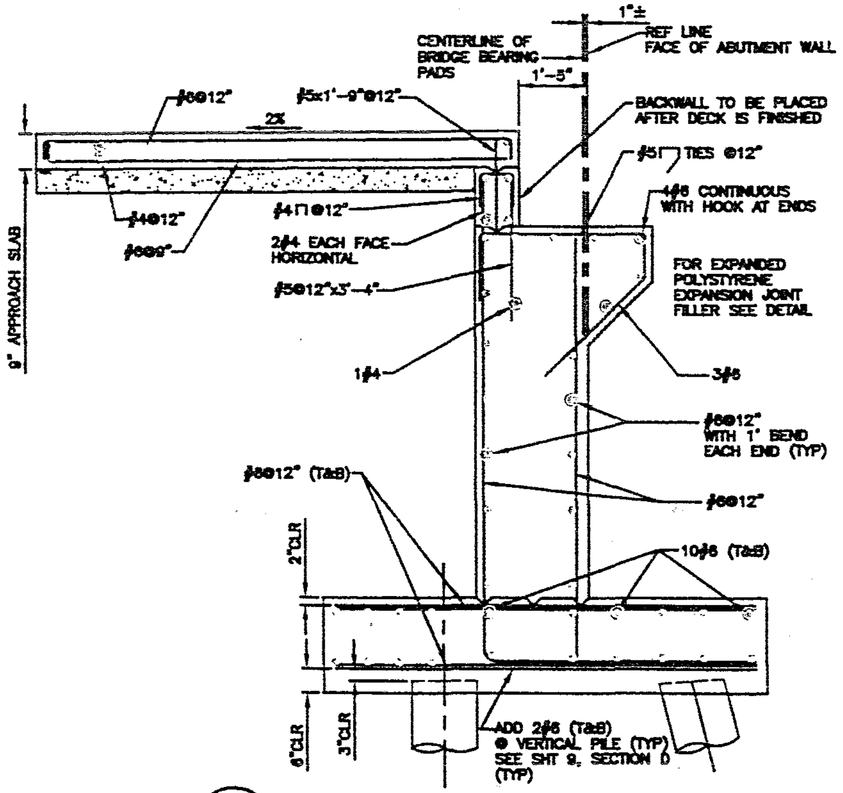
B
9
SECTION–FLOODWALL
(PRECAST OR CIP)
SCALE: 1/2"=1'-0"



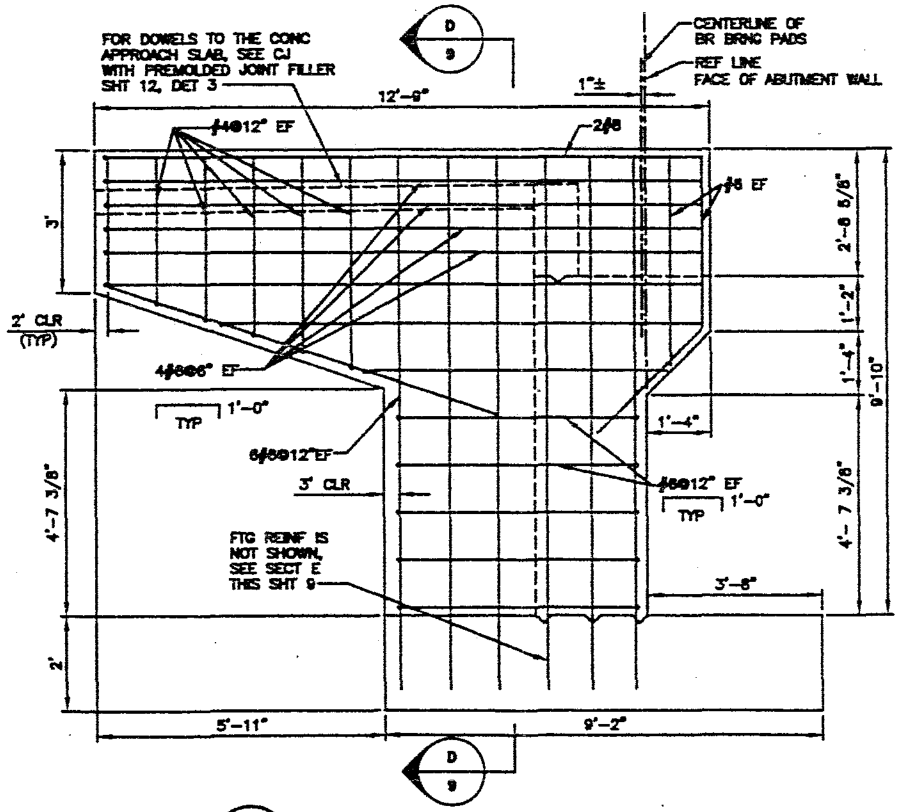
C
9
SECTION–FLOODWALL
SCALE: 1/2"=1'-0"



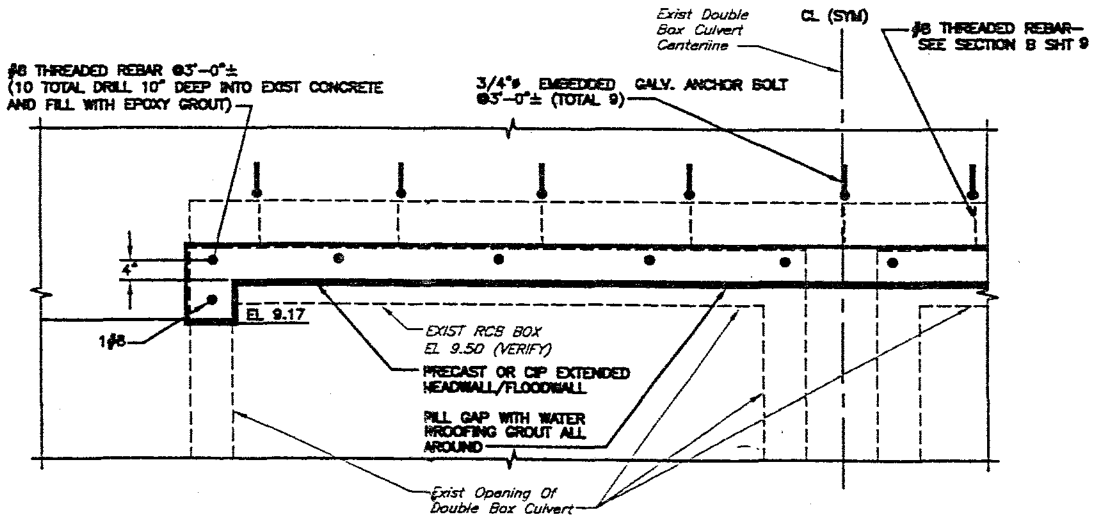
D
9
SECTION–ABUTMENT WINGWALL
SCALE: 1/2"=1'-0"


1"±
REF LINE FACE OF ABUTMENT WALL
CENTERLINE OF BRIDGE BEARING PADS
1'-5"
#6@12"
#5x1'-9"@12"
2%
BACKWALL TO BE PLACED AFTER DECK IS FINISHED
#5 ⌐¬ TIES @12"
#4@12"
#4 ⌐¬ @12"
4#8 CONTINUOUS WITH HOOK AT ENDS
#6@9"
2#4 EACH FACE HORIZONTAL
9" APPROACH SLAB
#5@12"x3'-4"
FOR EXPANDED POLYSTYRENE EXPANSION JOINT FILLER SEE DETAIL
1#4
3#8
#6@12" WITH 1' BEND EACH END (TYP)
#6@12" (T&B)
#6@12"
2"CLR
10#8 (T&B)
6"CLR
3"CLR
ADD 2#6 (T&B) @ VERTICAL PILE (TYP) SEE SHT 9, SECTION D (TYP)

E
9
BRIDGE ABUTMENT DETAIL
SCALE: 1/2"=1'-0"


D
9
FOR DOWELS TO THE CONC APPROACH SLAB, SEE CJ WITH PREMOLDED JOINT FILLER SHT 12, DET 3
12'-9"
1"±
CENTERLINE OF BR BRNG PADS
REF LINE FACE OF ABUTMENT WALL
#4@12" EF
2#8
#6 EF
3'
2'-8 5/8"
1'-2"
2' CLR (TYP)
4#8@6" EF
1'-4"
9'-10"
TYP 1'-0"
6#6@12"EF
1'-4"
3' CLR
#6@12" EF
TYP 1'-0"
4'-7 3/8"
4'- 7 3/8"
FTG REINF IS NOT SHOWN, SEE SECT E THIS SHT 9
3'-8"
2'
5'-11"
9'-2"
D
9

F
9
WINGWALL REINFORCEMENT DETAIL
SCALE: 1/2"=1'-0"


Exist Double Box Culvert Centerline
CL (SYM)
#8 THREADED REBAR– SEE SECTION B SHT 9
#8 THREADED REBAR @3'-0"± (10 TOTAL DRILL 10" DEEP INTO EXIST CONCRETE AND FILL WITH EPOXY GROUT)
3/4"ø EMBEDDED GALV. ANCHOR BOLT @3'-0"± (TOTAL 9)
4"
1#8
EL 9.17
EXIST RCB BOX EL 9.50 (VERIFY)
PRECAST OR CIP EXTENDED HEADWALL/FLOODWALL
FILL GAP WITH WATER PROOFING GROUT ALL AROUND
Exist Opening Of Double Box Culvert

1
9
DETAIL–FLOODWALL
(PRECAST OR CIP)
SCALE: 1/2"=1'-0"

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. 50–TON PILE SHALL BE 14 INCH SQUARE PC/PS CONCRETE PILE ALTERNATE "X". SEE STATE STANDARD PLAN "B2-5", 45–TON PILE FOR THE SIMILARITY.

GORDON H. LAU
No. C 48089
EXP. 6/30/02

DATE
07/25/2000
DESIGN
TRI NGUYEN
DRAWN
R. AGREDA
CHECKED
G. LAU

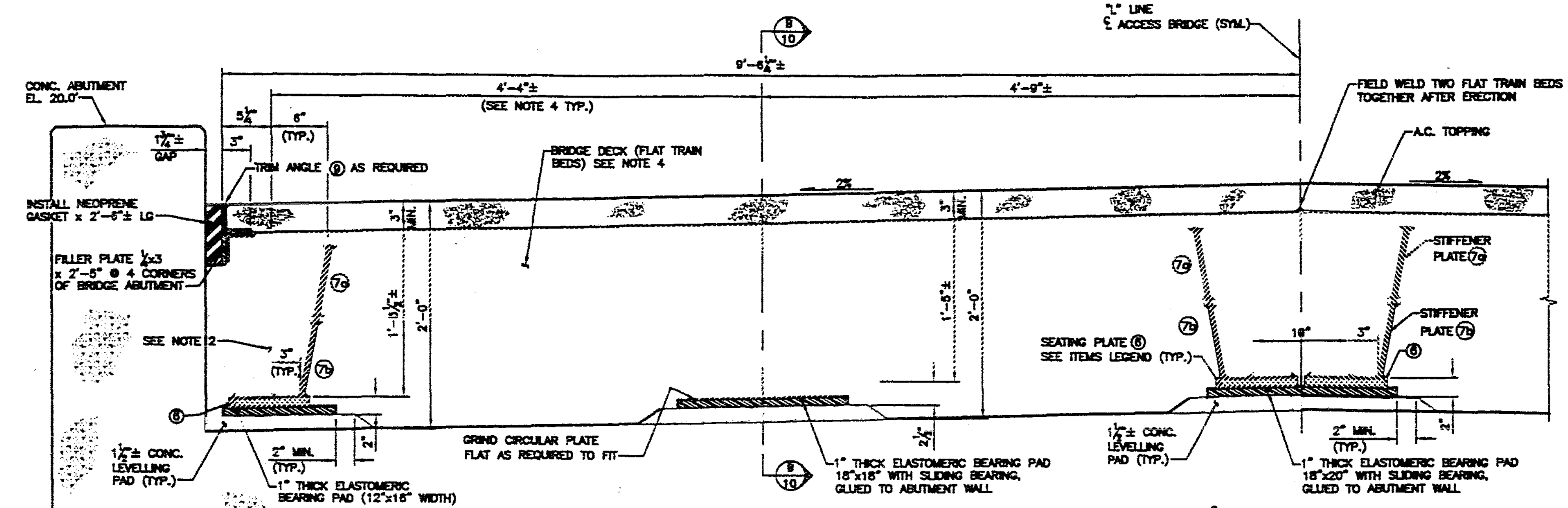
Santa Clara Valley Water District

ENGINEERING CERTIFICATION

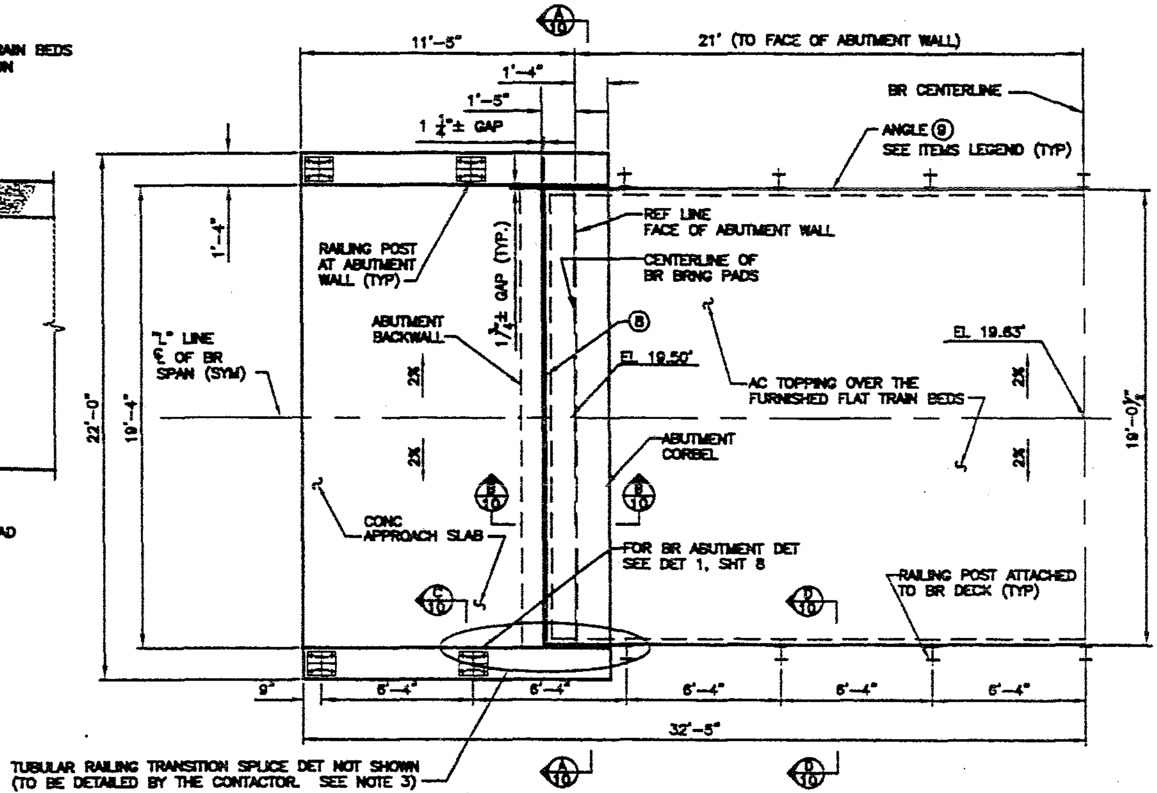
ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF
FLOODWALLS AND ACCESS BRIDGE
SECTIONS AND DETAILS STRUCTURAL

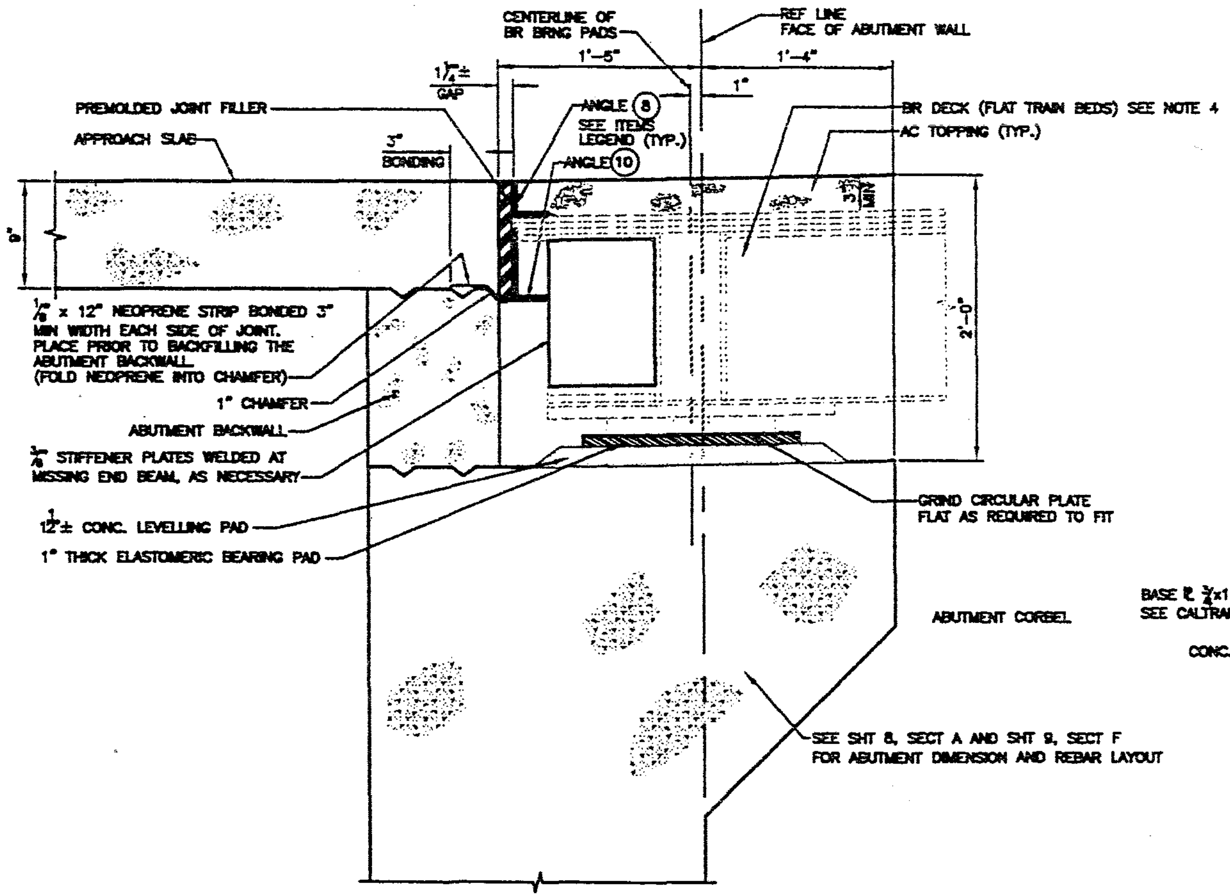
SCALE
AS SHOWN
SHEET
9
OF 19


"L" LINE
℄ ACCESS BRIDGE (SYM.)
B/10
9'-6¾"±
4'-4"±
(SEE NOTE 4 TYP.)
4'-9"±
CONC. ABUTMENT EL. 20.0'
1¼"± GAP
5¾"
6" (TYP.)
3"
TRIM ANGLE ⑨ AS REQUIRED
BRIDGE DECK (FLAT TRAIN BEDS) SEE NOTE 4
FIELD WELD TWO FLAT TRAIN BEDS TOGETHER AFTER ERECTION
A.C. TOPPING
2%
INSTALL NEOPRENE GASKET x 2'-5"± LG
FILLER PLATE ¼x3 x 2'-5" @ 4 CORNERS OF BRIDGE ABUTMENT
3" MIN.
7a
7b
1'-1⅝"±
2'-0"
1'-5"±
SEE NOTE 2
3" (TYP.)
6
STIFFENER PLATE 7a
STIFFENER PLATE 7b
SEATING PLATE ⑥ SEE ITEMS LEGEND (TYP.)
16"
1½"± CONC. LEVELLING PAD (TYP.)
2" MIN. (TYP.)
1" THICK ELASTOMERIC BEARING PAD (12"x18" WIDTH)
GRIND CIRCULAR PLATE FLAT AS REQUIRED TO FIT
1" THICK ELASTOMERIC BEARING PAD 18"x18" WITH SLIDING BEARING, GLUED TO ABUTMENT WALL
1" THICK ELASTOMERIC BEARING PAD 18"x20" WITH SLIDING BEARING, GLUED TO ABUTMENT WALL
B/10

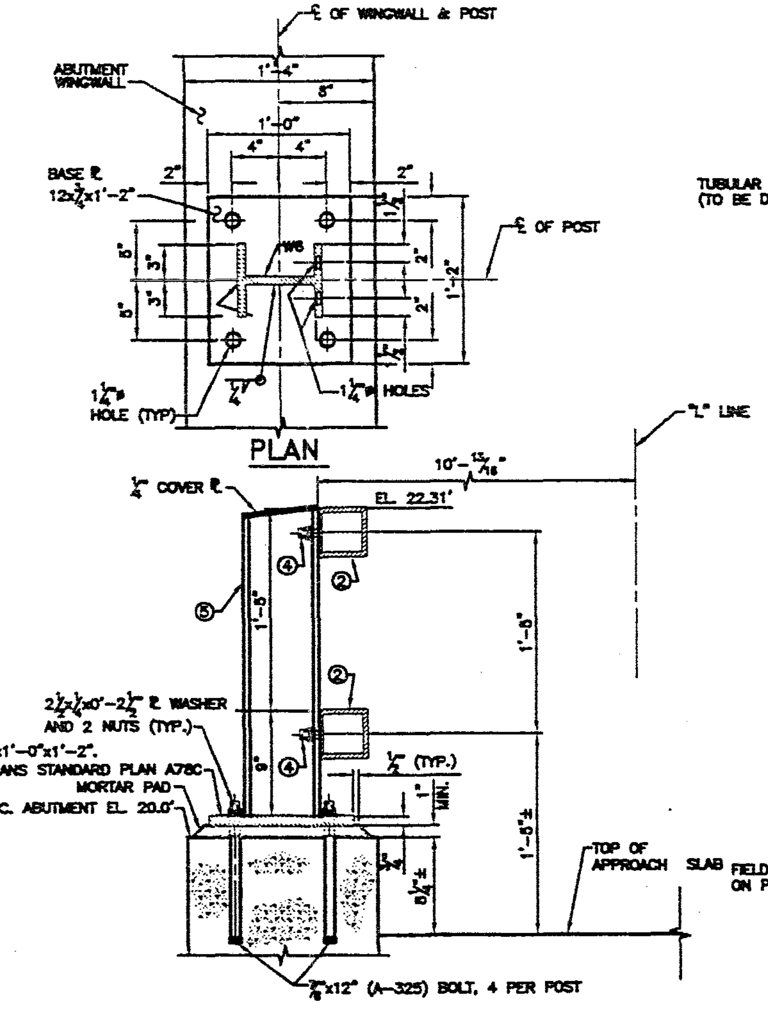
A/10 SECTION
SCALE: 1-1/2" = 1'-0"


A/10
11'-5"
21' (TO FACE OF ABUTMENT WALL)
1'-4"
1'-5"
1¼"± GAP
BR CENTERLINE
ANGLE ⑨ SEE ITEMS LEGEND (TYP)
RAILING POST AT ABUTMENT WALL (TYP)
REF LINE FACE OF ABUTMENT WALL
CENTERLINE OF BR BRNG PADS
1'-4"
1¼"± GAP (TYP.)
ABUTMENT BACKWALL
⑧
EL. 19.50'
EL. 19.63'
"L" LINE ℄ OF BR SPAN (SYM)
AC TOPPING OVER THE FURNISHED FLAT TRAIN BEDS
22'-0"
19'-4"
19'-0½"
2%
ABUTMENT CORBEL
B/10
CONC APPROACH SLAB
FOR BR ABUTMENT DET SEE DET 1, SHT 8
RAILING POST ATTACHED TO BR DECK (TYP)
C/10
D/10
9"
6'-4"
32'-5"
TUBULAR RAILING TRANSITION SPLICE DET NOT SHOWN (TO BE DETAILED BY THE CONTACTOR. SEE NOTE 3)

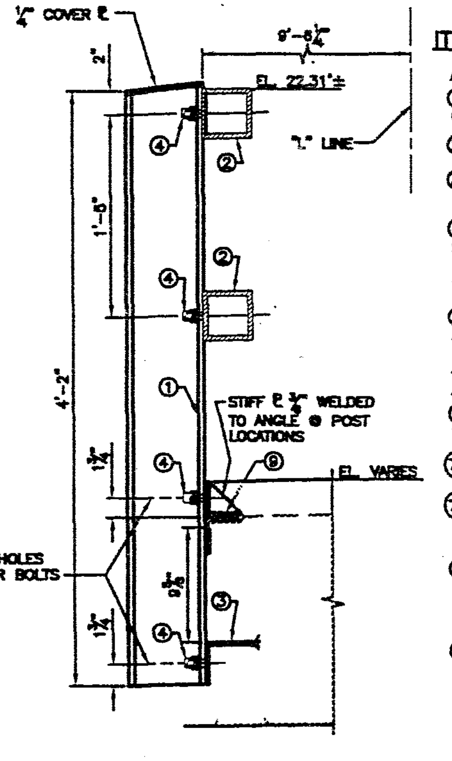
1/10 BRIDGE DECK PLAN DETAIL
SCALE: 1/4" = 1'-0"


CENTERLINE OF BR BRNG PADS
REF LINE FACE OF ABUTMENT WALL
1'-5"
1'-4"
1¼"± GAP
1"
PREMOLDED JOINT FILLER
ANGLE ⑧ SEE ITEMS LEGEND (TYP.)
BR DECK (FLAT TRAIN BEDS) SEE NOTE 4
AC TOPPING (TYP.)
APPROACH SLAB
3" BONDING
ANGLE ⑩
3" MIN
9"
2'-0"
⅛" x 12" NEOPRENE STRIP BONDED 3" MIN WIDTH EACH SIDE OF JOINT. PLACE PRIOR TO BACKFILLING THE ABUTMENT BACKWALL. (FOLD NEOPRENE INTO CHAMFER)
1" CHAMFER
ABUTMENT BACKWALL
⅜" STIFFENER PLATES WELDED AT MISSING END BEAM, AS NECESSARY
GRIND CIRCULAR PLATE FLAT AS REQUIRED TO FIT
1½"± CONC. LEVELLING PAD
1" THICK ELASTOMERIC BEARING PAD
ABUTMENT CORBEL
SEE SHT 8, SECT A AND SHT 9, SECT F FOR ABUTMENT DIMENSION AND REBAR LAYOUT

B/10 SECTION
SCALE: 1-1/2" = 1'-0"



C/10 RAILING AT ABUTMENT WALL (8 REQUIRED)
SCALE: 1-1/2" = 1'-0"


¼" COVER PL
9'-6¾"
EL. 22.31'±
"L" LINE
④
②
①
③
⑨
1'-5"
4'-2"
STIFF PL ⅜" WELDED TO ANGLE @ POST LOCATIONS
EL. VARIES
FIELD DRILL HOLES ON POST FOR BOLTS

D/10 SECTION THROUGH RAILING
SCALE: 1-1/2" = 1'-0"

ITEMS LEGEND:

A. RAILING:(SEE NOTE 3)

① W6x25, 4'-2" LG WITH 1$\frac{1}{4}$" DIAMETER HOLES ON EACH SIDE OF POST FLANGE (TOTAL 14).

② TS 4x4x$\frac{1}{4}$ STRUCTURAL TUBING.

③ L5x3$\frac{1}{2}$x$\frac{3}{8}$, 0'-6" LG OR EQUIVALENT, WELDED TO EXIST. CHANNEL BEAM (FIELD VERIFY TO FIT)

④ $\frac{5}{8}$" DIAMETER, 2" LG STUD BOLT, SHOP WELDED TO STRUCTURAL TUBING ② AND ANGLES ③ & ⑨ WITH HEX. NUT AND 2 WASHERS, 4 PER POST REQUIRED AT EACH LOCATION.

⑤ RAILING POST W6x25x2'-2" LG WITH BASE PLATE AND ANCHOR BOLTS (8 REQUIRED).

B. ADDITIONAL METAL WORK TO THE FURNISHED FLAT TRAIN BEDS:(SEE NOTE 4)

⑥ SEATING PLATE 1x8$\frac{1}{2}$x1'-2" WELDED TO THE FLAT TRAIN BED (8 REQUIRED).

(7a) STIFFENER PLATE $\frac{3}{8}$x8x0'-8"±, FIELD CUT TO FIT, WELDED TO THE FLAT TRAIN BED (16 REQUIRED).

(7b) STIFFENER PLATE $\frac{3}{8}$x8x1'-0"±, FIELD CUT TO FIT, WELDED TO THE FLAT BED AND SEATING PLATE (8 REQUIRED).

⑧ END ANGLES 3x3x$\frac{3}{8}$, 19'-6" LG (SEE PLAN DETAIL 1, SHEET 10), WELDED TO THE FLAT TRAIN BED BUILT-UP END BEAM, TO RETAIN BRIDGE DECK ASPHALT CONCRETE TOPPING, (2 REQUIRED).

⑨ EDGE ANGLES 4x3x$\frac{3}{8}$, 22'-4" LG (TRIM ANGLES AS REQUIRED), WELDED TO THE FLAT TRAIN BED BUILT-UP CHANNEL EXTERIOR GIRDER, TO RETAIN BRIDGE DECK ASPHALT CONCRETE TOPPING, (4 REQUIRED).

⑩ END STOPPING L6x3x$\frac{3}{8}$, 19'-4" LG WELDED TO THE FLAT TRAIN BED (2 REQUIRED).

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. ALL WELDS NOT SHOWN SHALL BE $\frac{1}{4}$" FILLET WELDS ALL AROUND UNLESS OTHERWISE NOTED.
2. EXISTING BRACKETS ATTACHED TO THE FURNISHED FLAT TRAIN BEDS ARE NOT SHOWN (FIELD VERIFY). THE CONTRACTOR HAS AN OPTION TO REMOVE THEM AS NECESSARY.
3. FOR TUBULAR RAILING TRANSITION, INCLUDING TUBE SPLICE DETAILS AND FABRICATION, SEE STANDARD PLAN B11-51 FOR THE SIMILARITY.
4. ALL DIMENSIONS OF THE FURNISHED FLAT TRAIN BEDS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS INDEPENDENTLY IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIALS AT THE APPROVAL OF THE ENGINEER. CONNECTION DETAILS MAY BE MODIFIED BY THE CONTRACTOR TO SUIT FIELD CONDITION.

GORDON M. LAU
No. C [illegible]
EXP. [illegible]
CIVIL

DATE
07/25/2000
DESIGN
T. NGUYEN
DRAWN
P. VU
CHECKED
G. LAU

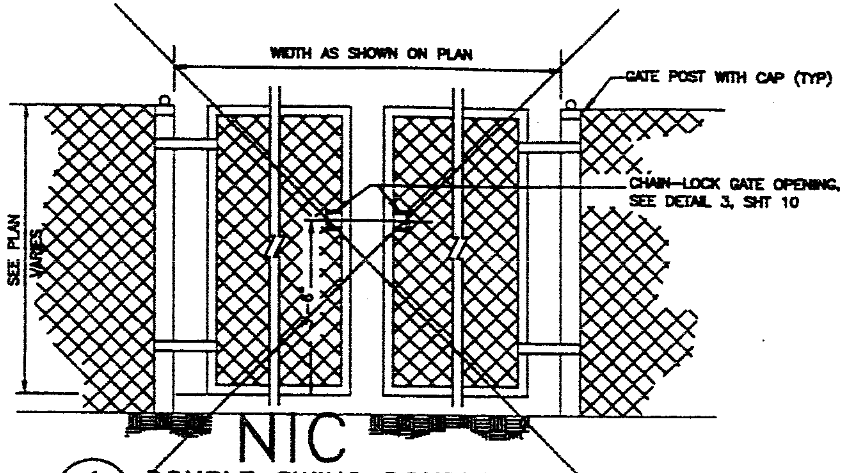
Santa Clara Valley Water District

ENGINEERING CERTIFICATION

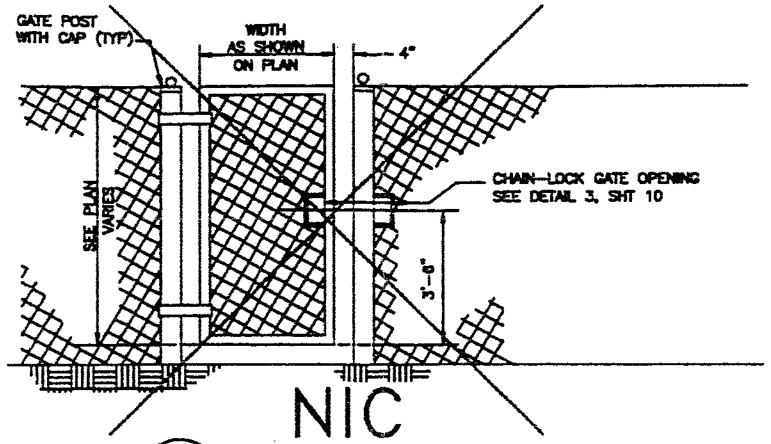
ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
BRIDGE DECK AND MISCELLANEOUS DETAIL

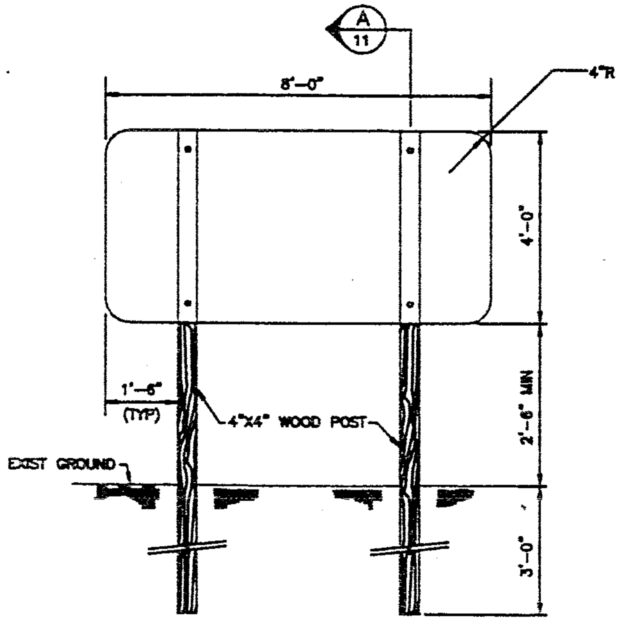
SCALE
AS SHOWN
SHEET
10
OF 19



1/11 DOUBLE SWING DOUBLE DRIVE GATE
NTS



2/11 SINGLE SWING GATE
NTS



7/11 PROJECT SIGN INSTALLATION
NTS

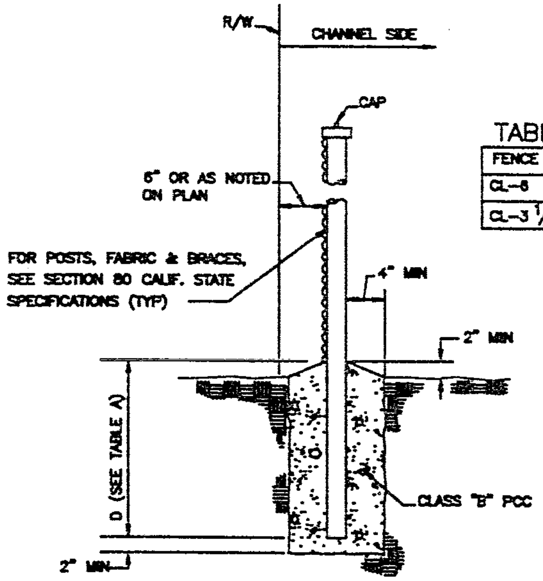
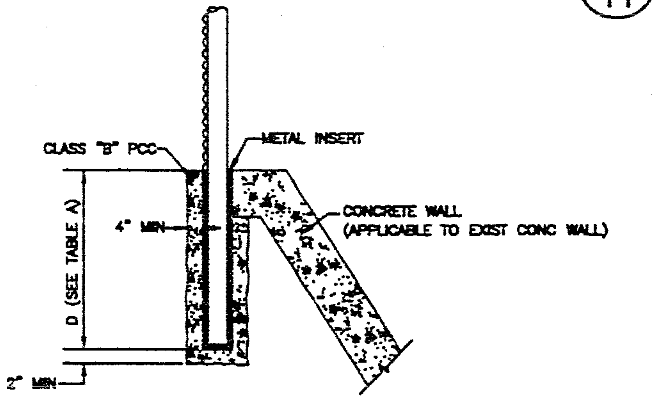


TABLE A

FENCE	D
CL-6	3'-0"
CL-3 ½	2'-6"

4/11 IN GROUND
NTS



5/11 ALONG CONCRETE WALL
NTS

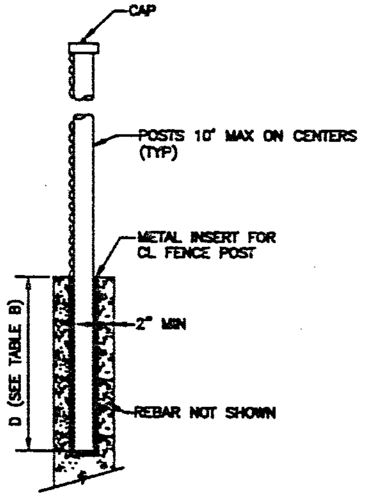
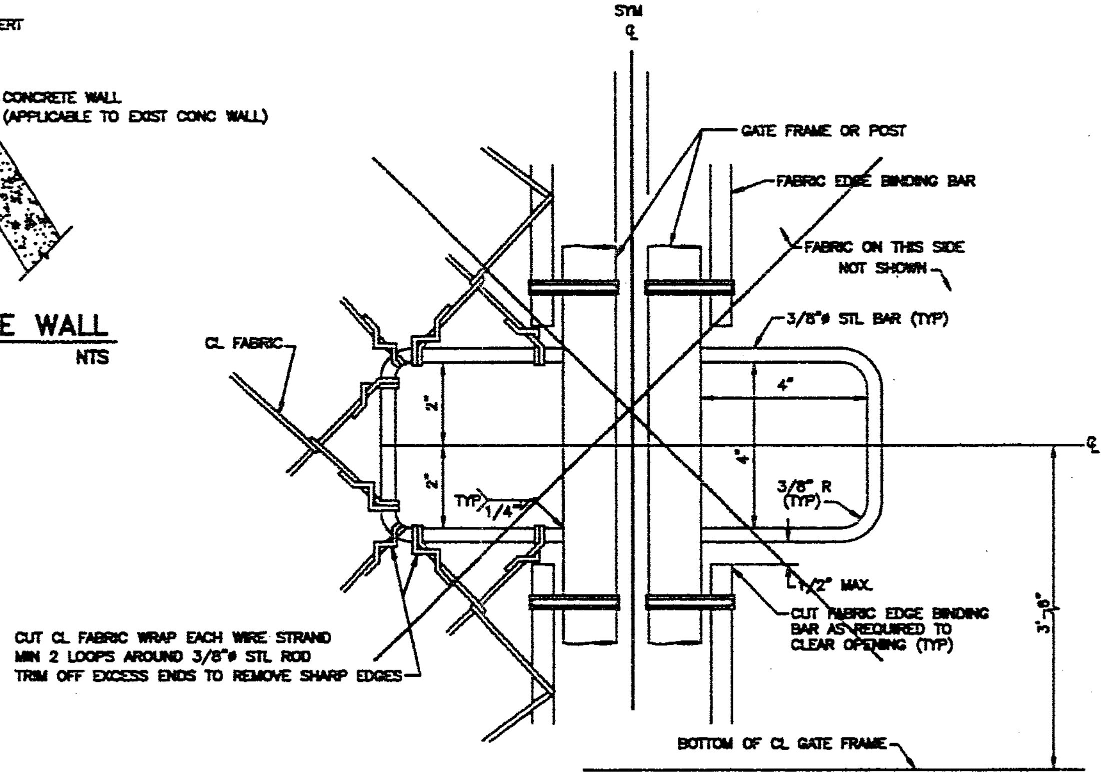

CAP
POSTS 10' MAX ON CENTERS (TYP)
METAL INSERT FOR CL FENCE POST
2" MIN
D (SEE TABLE B)
REBAR NOT SHOWN

TABLE B

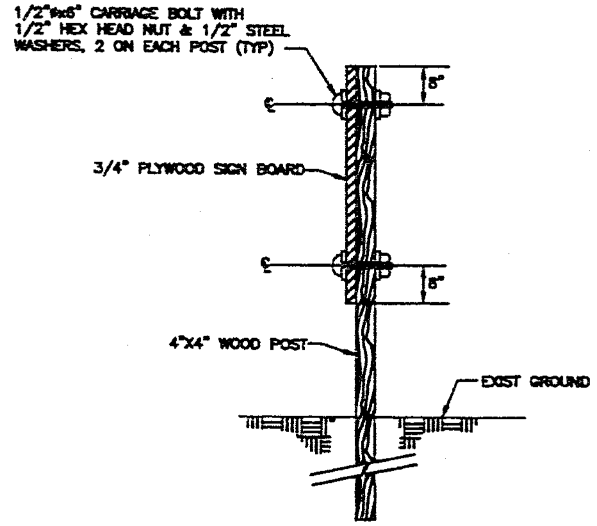
FENCE	D
CL-8	2'-0"
CL-6	1'-6"
CL-3 ½	1'-0"

6/11 IN CONCRETE WALL
NTS


SYM ℄
GATE FRAME OR POST
FABRIC EDGE BINDING BAR
FABRIC ON THIS SIDE NOT SHOWN
3/8"ø STL BAR (TYP)
CL FABRIC
4"
2"
2"
4"
℄
TYP 1/4"
3/8" R (TYP)
1/2" MAX.
CUT FABRIC EDGE BINDING BAR AS REQUIRED TO CLEAR OPENING (TYP)
3'-6"
CUT CL FABRIC WRAP EACH WIRE STRAND MIN 2 LOOPS AROUND 3/8"ø STL ROD TRIM OFF EXCESS ENDS TO REMOVE SHARP EDGES
BOTTOM OF CL GATE FRAME

NOTE
CHAIN & LOCK SHALL BE FURNISHED & INSTALLED BY SCVWD NIC

3/11 CHAIN-LOCK GATE OPENING
NTS


1/2"øx6" CARRIAGE BOLT WITH 1/2" HEX HEAD NUT & 1/2" STEEL WASHERS, 2 ON EACH POST (TYP)
℄
8"
3/4" PLYWOOD SIGN BOARD
℄
8"
4"X4" WOOD POST
EXIST GROUND

A/11 SIGN BOLTING
NTS

CHAIN LINK FENCE INSTALLATION

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

NOTE 1: REFLECTIVE DEPTH MARKER SHALL BE INSTALLED AT THE STATIONS ON THE LEFT OR RIGHT BANK UPSTREAM AND DOWNSTREAM OF BRIDGE AS SHOWN ON THE PLAN SHEETS.

NOTE 2: NUMBER IS TO REPRESENT VERTICAL DISTANCE IN FEET ABOVE CHANNEL INVERT IN ONE FOOT INCREMENTS.

NOTE 3: STATION LOCATION SHALL BE CENTERED AND LOCATED ABOVE THE HIGHEST DEPTH MARKER. STATION NUMBERS SHALL BE SAME SIZE AND MATERIAL AS DEPTH NUMBERS.

NOTE 4: CUT OR BUTT EVERY OTHER HORIZONTAL BAR WHERE THE CHANNEL WALL FACE IS EXPOSED.

GORDON M. LAU
No. C 40086
EXP. 6/30/02

DATE 07/25/2000
DESIGN SCVWD
DRAWN P. VU
CHECKED G. LAU

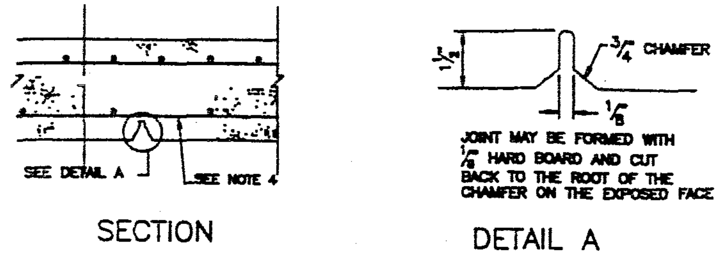
Santa Clara Valley Water District

ENGINEERING CERTIFICATION

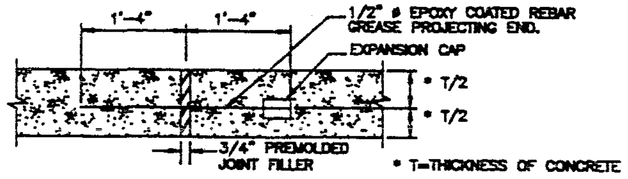
ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE STANDARD DETAILS

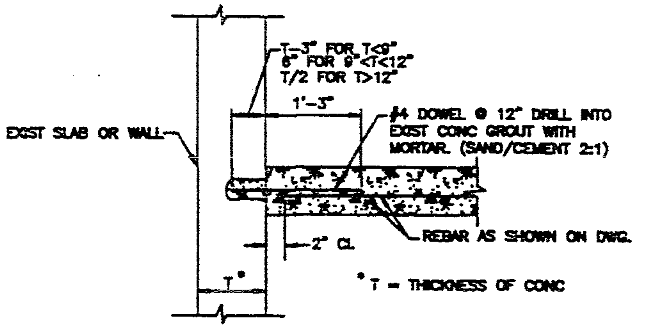
SCALE AS SHOWN
SHEET 11 OF 19

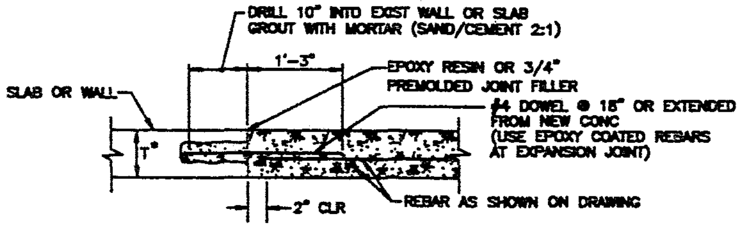

SEE DETAIL A
SEE NOTE 4
SECTION
1½"
¾" CHAMFER
⅛"
JOINT MAY BE FORMED WITH ⅛" HARD BOARD AND CUT BACK TO THE ROOT OF THE CHAMFER ON THE EXPOSED FACE
DETAIL A

1/12 CONTRACTION OR WEAKENED PLANE JOINT
NTS

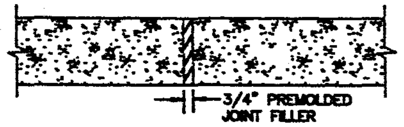

1'-4"
1'-4"
1/2" ⌀ EPOXY COATED REBAR GREASE PROJECTING END.
EXPANSION CAP
* T/2
* T/2
3/4" PREMOLDED JOINT FILLER
* T=THICKNESS OF CONCRETE

2/12 EXPANSION JOINT
NTS

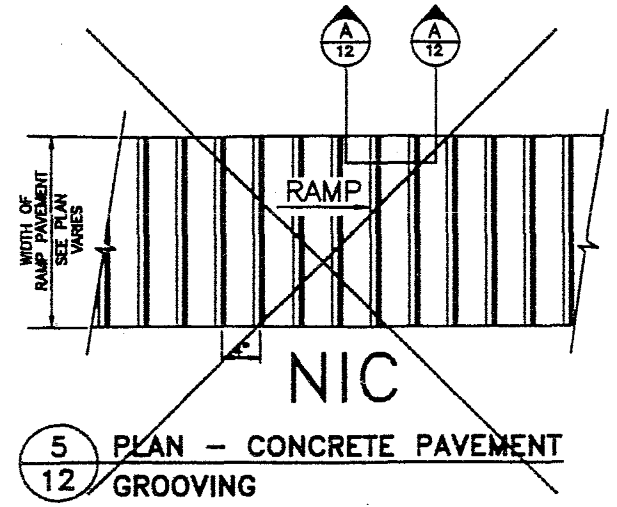



DRILL 10" INTO EXIST WALL OR SLAB GROUT WITH MORTAR (SAND/CEMENT 2:1)
1'-3"
EPOXY RESIN OR 3/4" PREMOLDED JOINT FILLER
#4 DOWEL @ 18" OR EXTENDED FROM NEW CONC (USE EPOXY COATED REBARS AT EXPANSION JOINT)
SLAB OR WALL
T"
2" CLR
REBAR AS SHOWN ON DRAWING

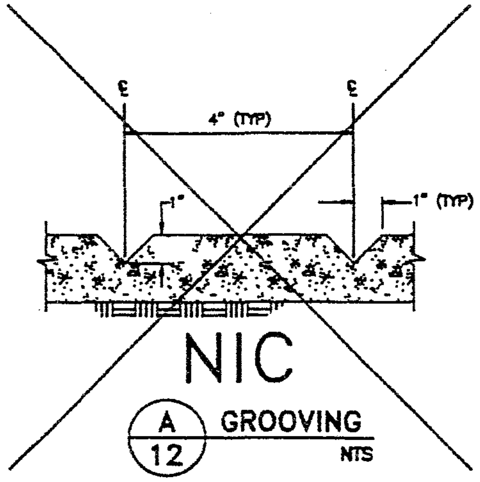
3/12 CONSTRUCTION JOINT TO EXISTING CONCRETE
NTS



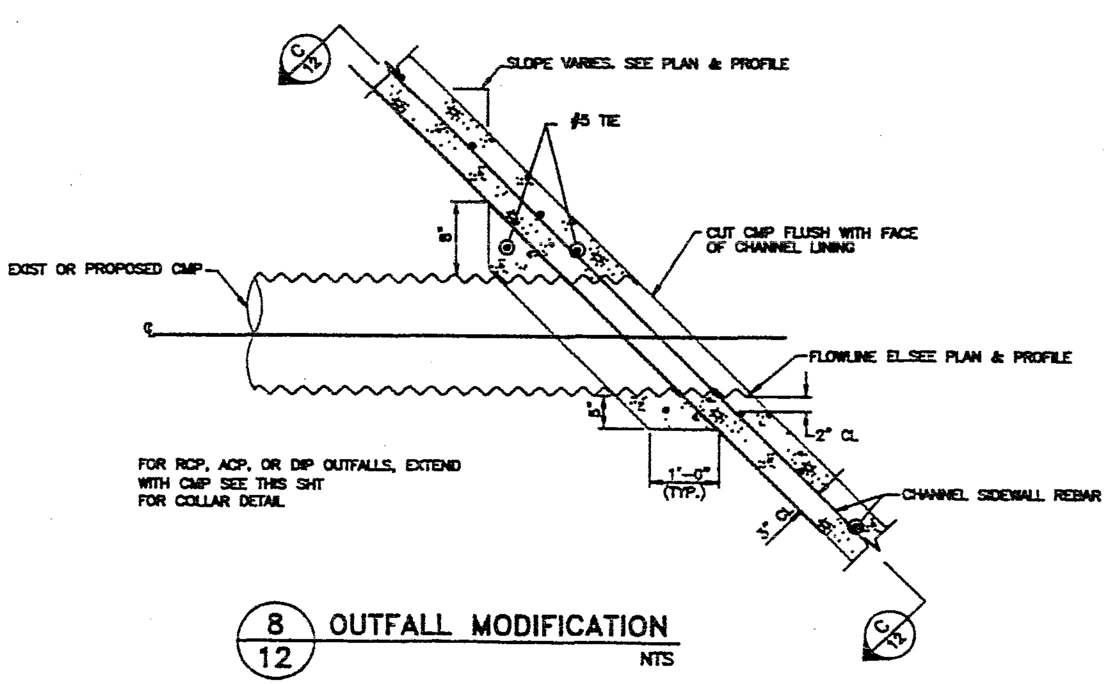
4/12 SETTLEMENT JOINT
NTS



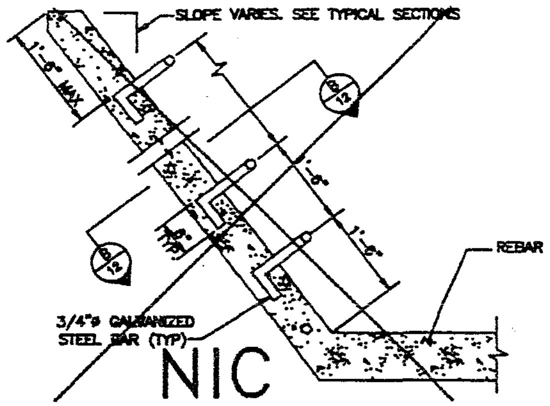
5/12 PLAN - CONCRETE PAVEMENT GROOVING
NTS



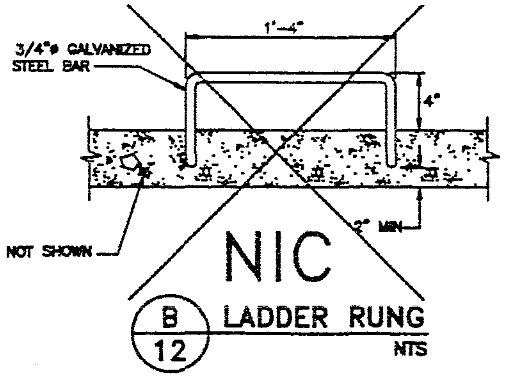
A/12 GROOVING
NTS


C/12
SLOPE VARIES. SEE PLAN & PROFILE
#5 TIE
8"
CUT CMP FLUSH WITH FACE OF CHANNEL LINING
EXIST OR PROPOSED CMP
℄
FLOWLINE EL.SEE PLAN & PROFILE
5"
2" CL
1'-0" (TYP.)
CHANNEL SIDEWALL REBAR
FOR RCP, ACP, OR DIP OUTFALLS, EXTEND WITH CMP SEE THIS SHT FOR COLLAR DETAIL
C/12

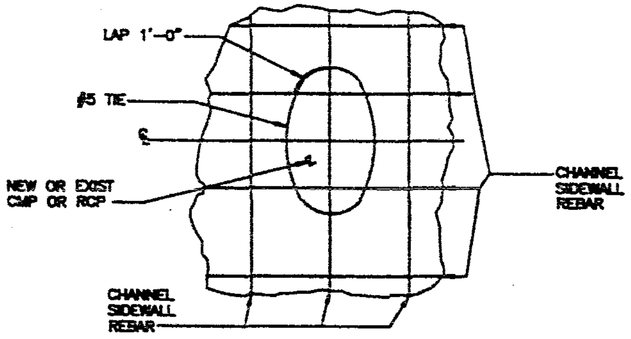
8/12 OUTFALL MODIFICATION
NTS


SLOPE VARIES. SEE TYPICAL SECTIONS
1'-6" MAX
1'-6"
1'-6"
B/12
B/12
3/4"⌀ GALVANIZED STEEL BAR (TYP)
REBAR NOT SHOWN
NIC

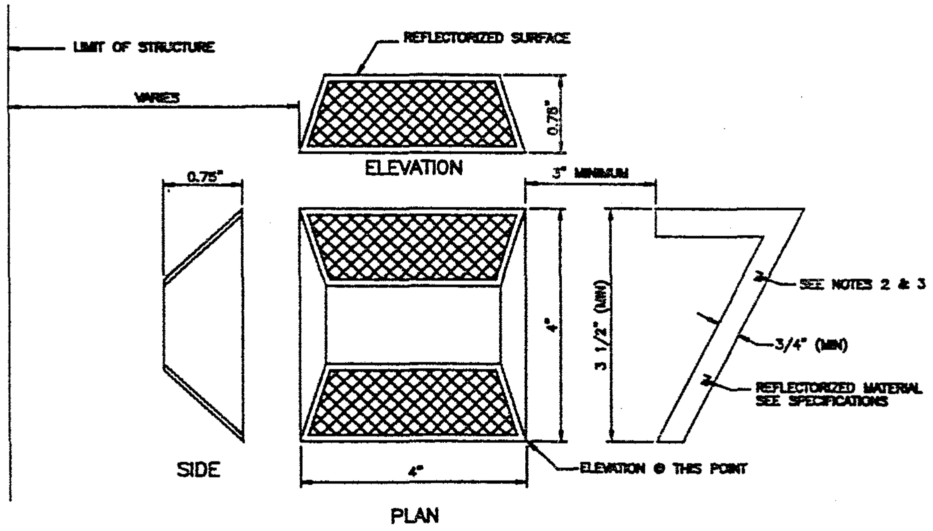
6/12 LADDER
NTS



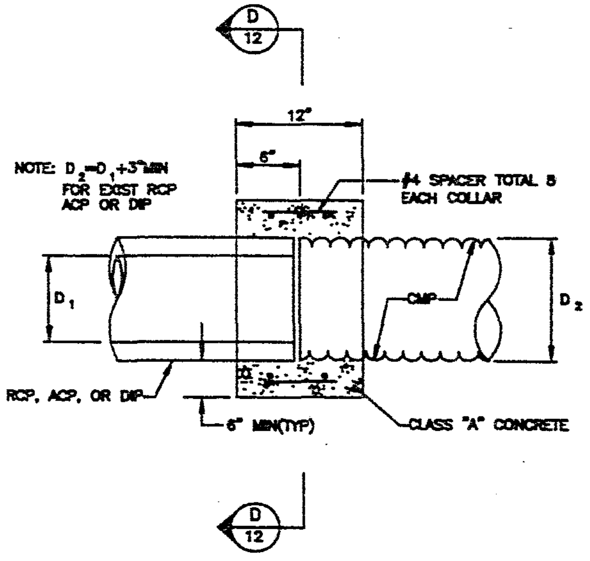
B/12 LADDER RUNG
NTS



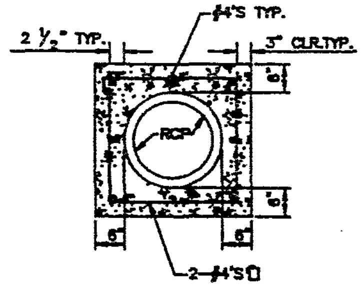
C OUTFALL MODIFICATION
NTS



7/12 REFLECTIVE DEPTH MARKER SEE NOTE 1
NTS


D/12
12"
6"
NOTE: D₂=D₁+3"MIN FOR EXIST RCP ACP OR DIP
#4 SPACER TOTAL 8 EACH COLLAR
D₁
CMP
D₂
RCP, ACP, OR DIP
6" MIN(TYP)
CLASS "A" CONCRETE
D/12

9/12 CONCRETE COLLAR
NTS



D/12 SECTION
NTS

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

NOTE 1: WEEP HOLES SHALL BE 4" POLYVINYL CHLORIDE (PVC) DRAIN PIPE.

NOTE 2: SPACE WEEP HOLES LONGITUDINALLY AT 10' O.C. WITH A 1' THICK BLANKET OF PERMEABLE MATERIAL BENEATH CONCRETE CHANNEL LINING SIDE SLOPE AND A CONTINUOUS 8" BLANKET OF PERMEABLE MATERIAL UNDER CHANNEL BOTTOM AND RAMPS.

NOTE 3: CUT PVC FLUSH WITH FACE OF SACKED CONCRETE CHANNEL LINING OR PCC CHANNEL LINING AND BASE SLAB.

GORDON M. LAU
No. C 48089
EXP. 6/30/02

DATE
07/26/2000
DESIGN
SCVWD
DRAWN
P. VU
R. AGREDA
CHECKED
G. LAU

Santa Clara Valley Water District

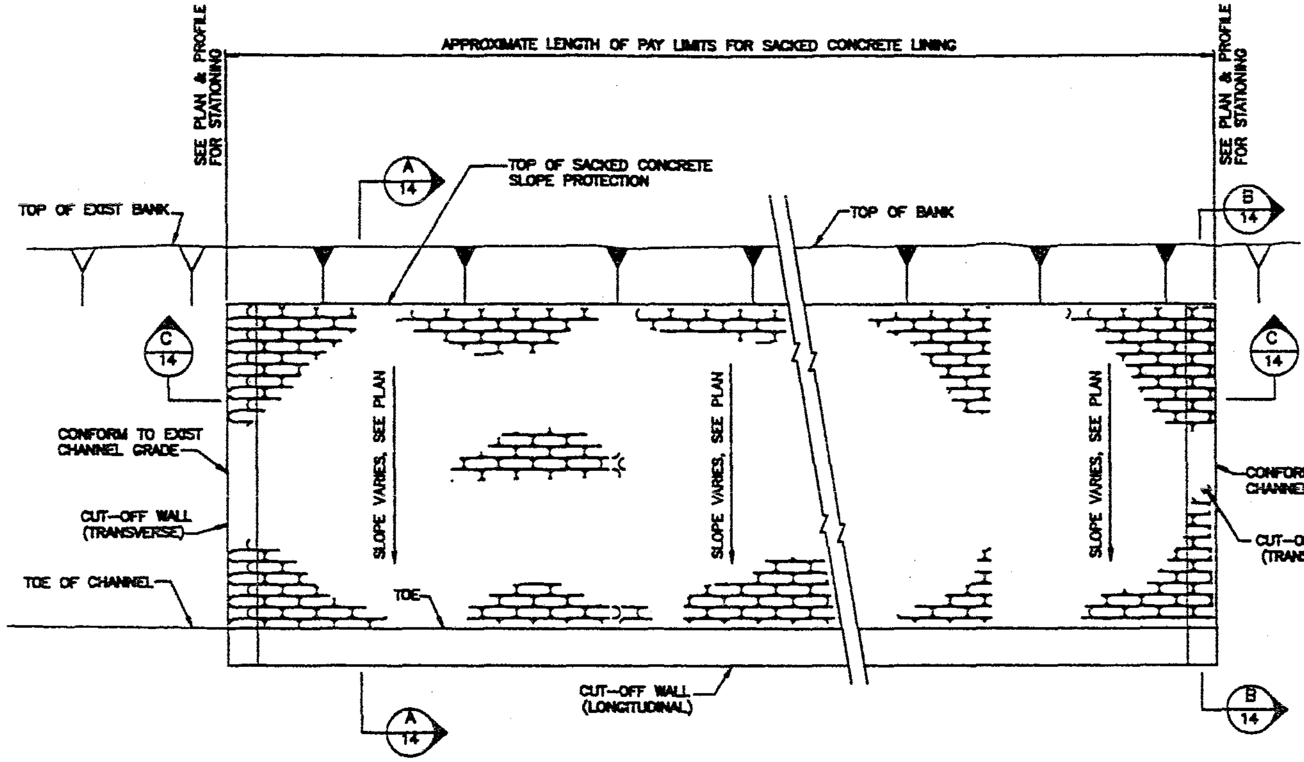
ENGINEERING CERTIFICATION
ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE STANDARD DETAILS

SCALE
AS SHOWN

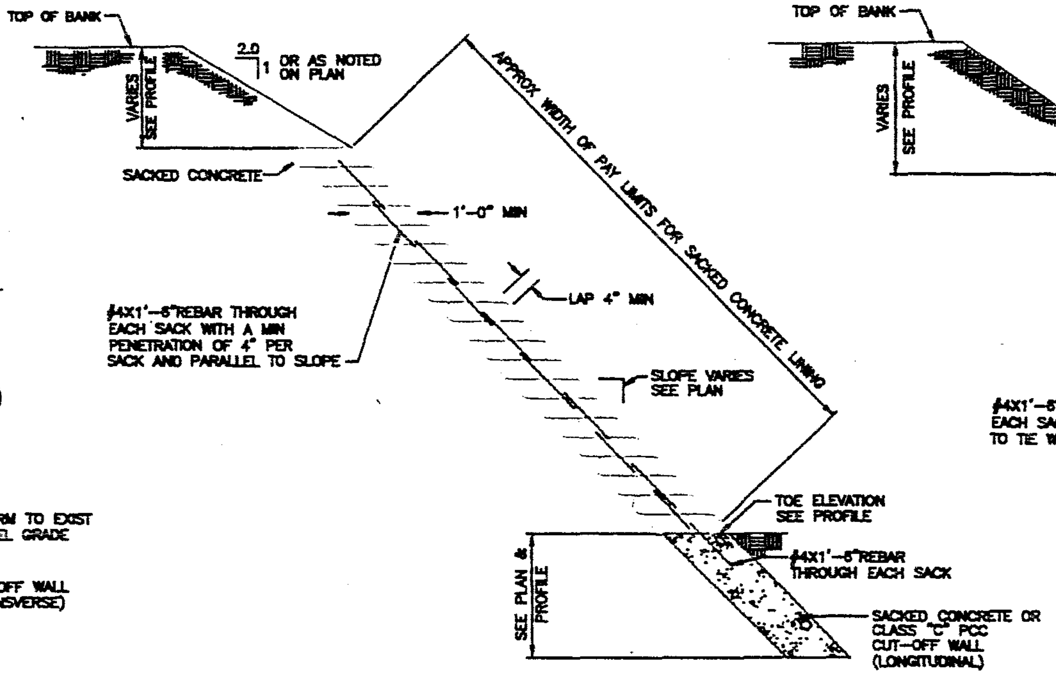
SHEET
12
OF 19

[illegible] SHT_12.DWG 07/18/2000 11:49:38 AM PST


APPROXIMATE LENGTH OF PAY LIMITS FOR SACKED CONCRETE LINING
SEE PLAN & PROFILE FOR STATIONING
TOP OF SACKED CONCRETE SLOPE PROTECTION
A 14
B 14
C 14
TOP OF EXIST BANK
TOP OF BANK
CONFORM TO EXIST CHANNEL GRADE
CUT-OFF WALL (TRANSVERSE)
TOE OF CHANNEL
SLOPE VARIES, SEE PLAN
TOE
CUT-OFF WALL (LONGITUDINAL)

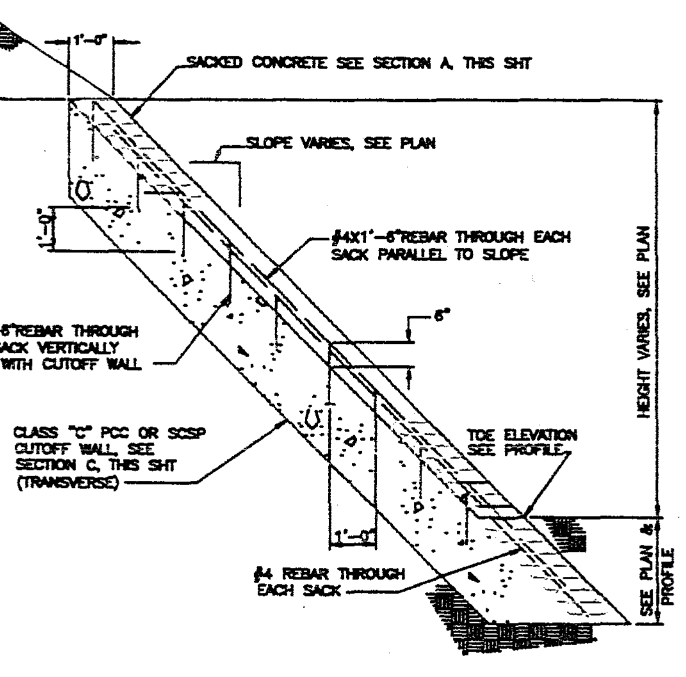
1/13 PLAN-SACKED CONCRETE SLOPE PROTECTION

NTS


TOP OF BANK
2.0 1 OR AS NOTED ON PLAN
VARIES SEE PROFILE
APPROX WIDTH OF PAY LIMITS FOR SACKED CONCRETE LINING
SACKED CONCRETE
1'-0" MIN
LAP 4" MIN
#4X1'-6"REBAR THROUGH EACH SACK WITH A MIN PENETRATION OF 4" PER SACK AND PARALLEL TO SLOPE
SLOPE VARIES SEE PLAN
TOE ELEVATION SEE PROFILE
#4X1'-6"REBAR THROUGH EACH SACK
SEE PLAN & PROFILE
SACKED CONCRETE OR CLASS "C" PCC CUT-OFF WALL (LONGITUDINAL)

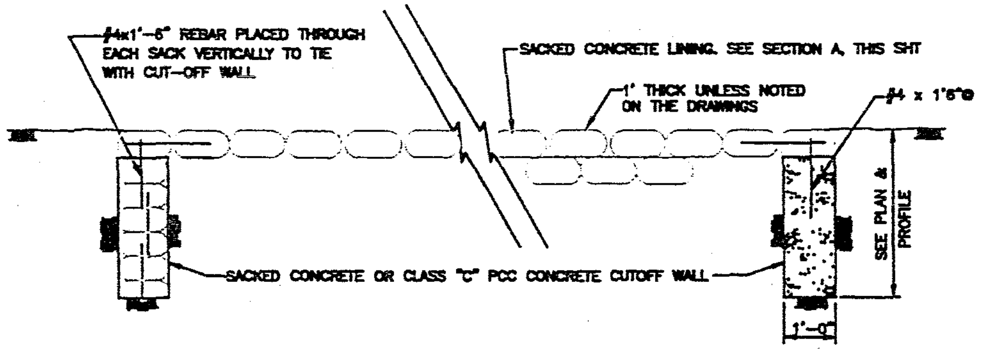
A/13 SACKED CONCRETE SLOPE PROTECTION

NTS


TOP OF BANK
VARIES SEE PROFILE
1'-0"
SACKED CONCRETE SEE SECTION A, THIS SHT
SLOPE VARIES, SEE PLAN
1'-0"
#4X1'-6"REBAR THROUGH EACH SACK PARALLEL TO SLOPE
#4X1'-6"REBAR THROUGH EACH SACK VERTICALLY TO TIE WITH CUTOFF WALL
6"
HEIGHT VARIES, SEE PLAN
CLASS "C" PCC OR SCSP CUTOFF WALL, SEE SECTION C, THIS SHT (TRANSVERSE)
TOE ELEVATION SEE PROFILE
1'-0"
#4 REBAR THROUGH EACH SACK
SEE PLAN & PROFILE

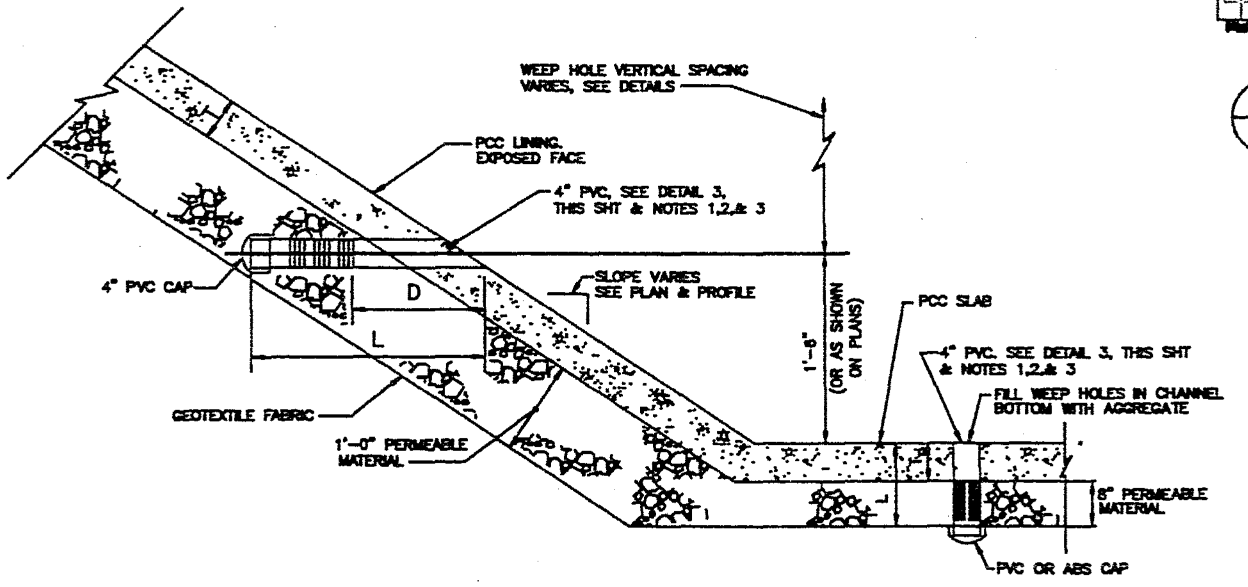
B/13 CONCRETE CUT-OFF WALL

NTS


#4x1'-6" REBAR PLACED THROUGH EACH SACK VERTICALLY TO TIE WITH CUT-OFF WALL
SACKED CONCRETE LINING. SEE SECTION A, THIS SHT
1' THICK UNLESS NOTED ON THE DRAWINGS
#4 x 1'6"@ 2'0"
SEE PLAN & PROFILE
SACKED CONCRETE OR CLASS "C" PCC CONCRETE CUTOFF WALL
1'-0"

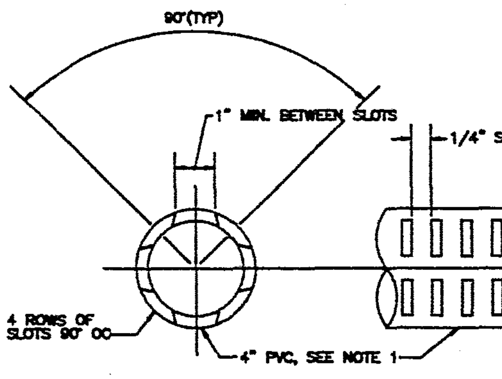
C/13 SACKED CONCRETE & CONCRETE CUTOFF WALL (TRANSVERSE)

NTS


WEEP HOLE VERTICAL SPACING VARIES, SEE DETAILS
PCC LINING. EXPOSED FACE
4" PVC, SEE DETAIL 3, THIS SHT & NOTES 1,2,& 3
4" PVC CAP
SLOPE VARIES SEE PLAN & PROFILE
D
L
1'-6" (OR AS SHOWN ON PLANS)
PCC SLAB
4" PVC. SEE DETAIL 3, THIS SHT & NOTES 1,2,& 3
FILL WEEP HOLES IN CHANNEL BOTTOM WITH AGGREGATE
GEOTEXTILE FABRIC
1'-0" PERMEABLE MATERIAL
8" PERMEABLE MATERIAL
PVC OR ABS CAP

2/13 CONCRETE CHANNEL LINING WEEP HOLE

NTS



DETAIL 3/13 POLYVINYL CHLORIDE PVC DRAIN PIPE WEEP HOLES

NTS

T THICKNESS (INCHES)	Z CHANNEL SLOPE (±)	L LENGTH OF PIPE	D (INCHES)	NUMBER OF SLOTS PER ROW MIN
9	1:1 TO 1.5:1	24 TO 32	15 TO 20	22 TO 30
12	3/8:1 TO 1:1	22 TO 28	14 TO 18	20 TO 24
14	VERT TO 3/8	20 TO 36	10 TO 26	24
14	VERT	22	14±	22

TABLE FOR 4"ø POLYVINYL CHLORIDE (PVC) WEEP HOLES

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

NOTE 1: WEEP HOLES SHALL BE 4" POLYVINYL CHLORIDE (PVC) DRAIN PIPE.

NOTE 2: SPACE WEEP HOLES LONGITUDINALLY AT 10' O.C. UNLESS NOTED OTHERWISE ON THE DRAWINGS WITH A 1' THICK BLANKET OF PERMEABLE MATERIAL BENEATH CONCRETE CHANNEL LINING SIDE SLOPE AND A CONTINUOUS 8" BLANKET OF PERMEABLE MATERIAL UNDER CHANNEL BOTTOM AND RAMPS.

NOTE 3: CUT PVC FLUSH WITH FACE OF SACKED CONCRETE CHANNEL LINING OR PCC CHANNEL LINING AND BASE SLAB.

GORDON M. LAU
EXP. 6/30/02

DATE 07/25/2000
DESIGN SCWD
DRAWN P. VU R. AGREDA
CHECKED G. LAU

Santa Clara Valley Water District

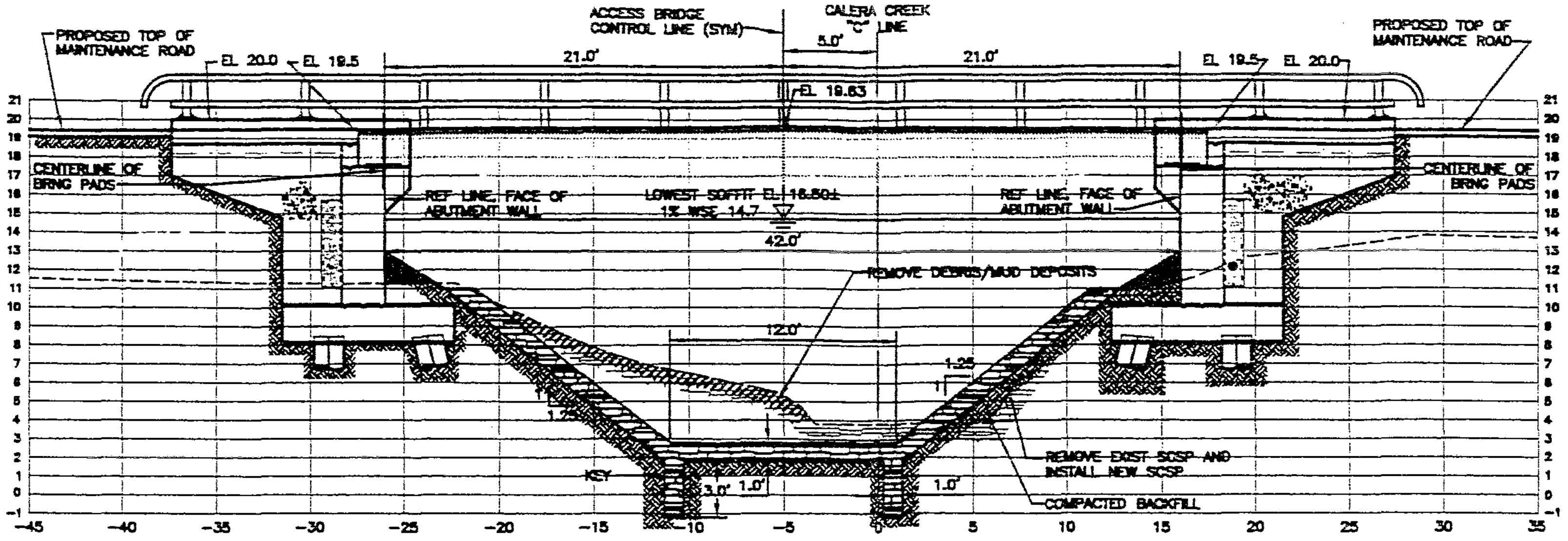
ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE STANDARD DETAILS

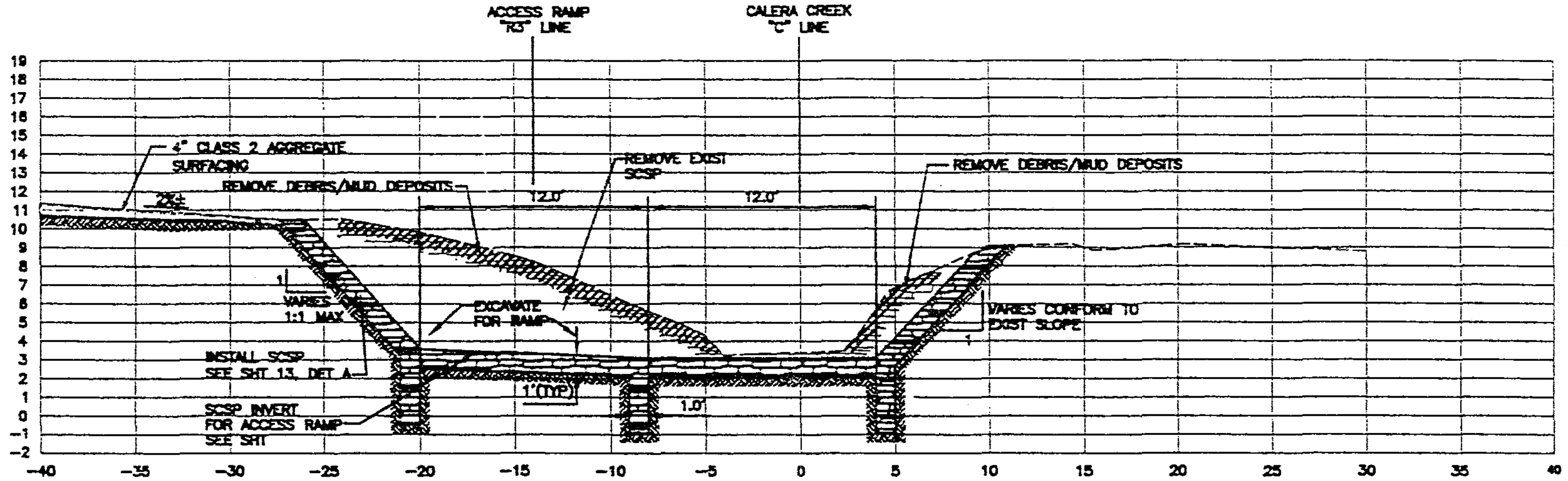
SCALE AS SHOWN

SHEET 13 OF 19



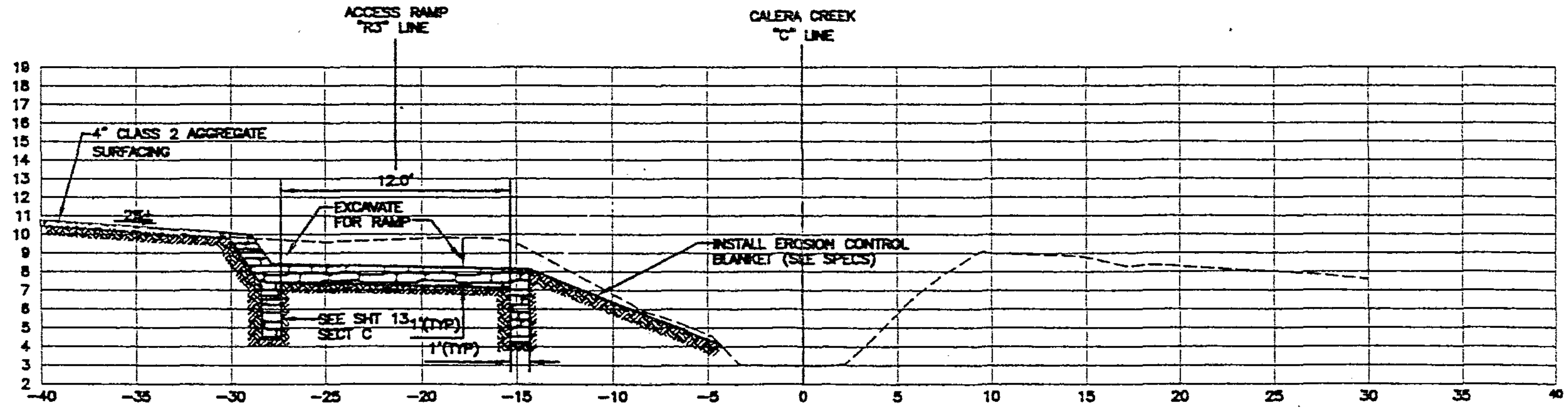
C/14 SECTION @ STA. 2+13.00

"C" LINE



B/14 SECTION @ STA. 1+81.78

"C" LINE



A/14 SECTION @ STA. 1+50.00

"C" LINE

REV	DESCRIPTION	DATE	APPR	REFERENCE INFORMATION AND NOTES

REGISTERED PROFESSIONAL ENGINEER
GORDON H. LAU
No. C 46088
EXP. 6/30/02
CIVIL
STATE OF CALIFORNIA

DATE 07/25/2000
DESIGN TRI NGUYEN R. AGREDA
DRAWN R. AGREDA
CHECKED G. LAU

Santa Clara Valley Water District

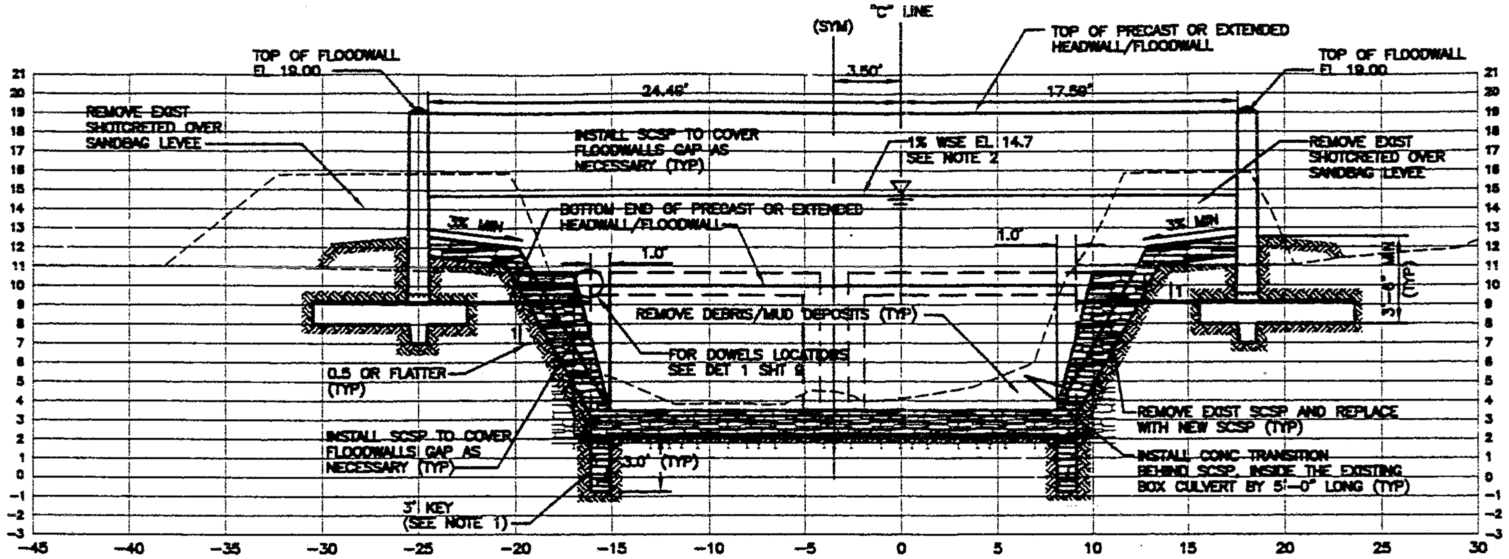
ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
CROSS-SECTIONS "C" LINE

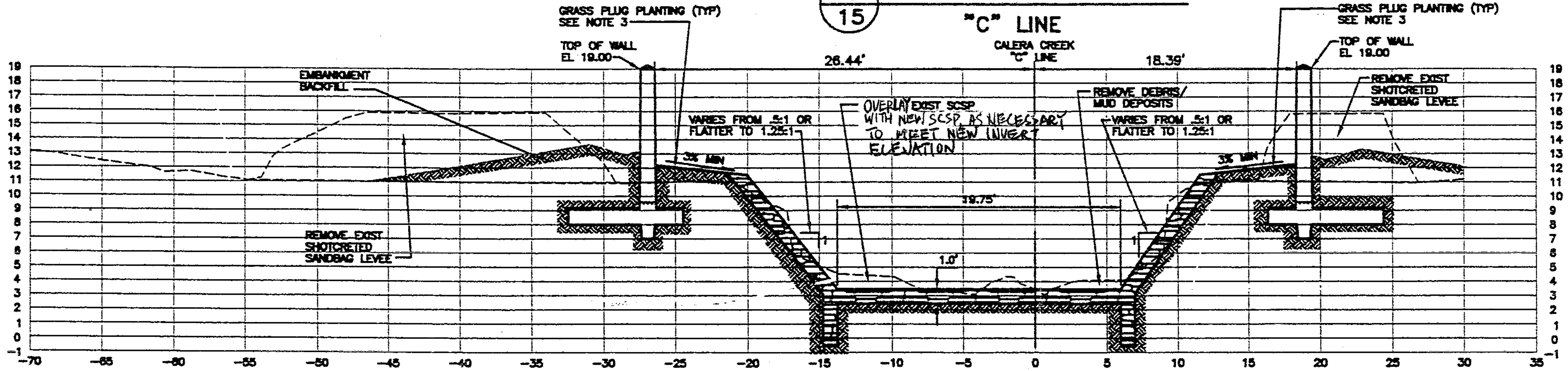
SCALE
H: 1"=5'
V: 1"=5'

SHEET
14
OF 19


"C" LINE
(SYM)
TOP OF PRECAST OR EXTENDED HEADWALL/FLOODWALL
TOP OF FLOODWALL EL 19.00
TOP OF FLOODWALL EL 19.00
24.46'
3.50'
17.59'
REMOVE EXIST SHOTCRETED OVER SANDBAG LEVEE
INSTALL SCSP TO COVER FLOODWALLS GAP AS NECESSARY (TYP)
1% WSE EL 14.7 SEE NOTE 2
REMOVE EXIST SHOTCRETED OVER SANDBAG LEVEE
BOTTOM END OF PRECAST OR EXTENDED HEADWALL/FLOODWALL
3% MIN
3% MIN
1.0'
1.0'
3' MIN (TYP)
REMOVE DEBRIS/MUD DEPOSITS (TYP)
FOR DOWELS LOCATIONS SEE DET 1 SHT 8
0.5 OR FLATTER (TYP)
REMOVE EXIST SCSP AND REPLACE WITH NEW SCSP (TYP)
INSTALL SCSP TO COVER FLOODWALLS GAP AS NECESSARY (TYP)
INSTALL CONC TRANSITION BEHIND SCSP, INSIDE THE EXISTING BOX CULVERT BY 5'-0" LONG (TYP)
3.0' (TYP)
3' KEY (SEE NOTE 1)
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 −1 −2 −3
−45 −40 −35 −30 −25 −20 −15 −10 −5 0 5 10 15 20 25 30

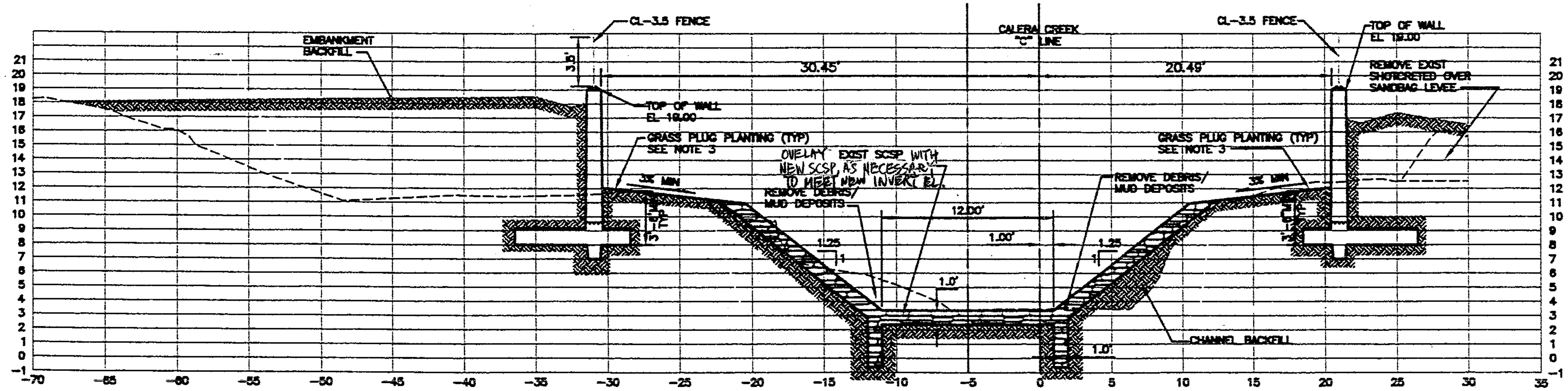
C/15 SECTION @ STA. 2+43.34

"C" LINE


GRASS PLUG PLANTING (TYP) SEE NOTE 3
GRASS PLUG PLANTING (TYP) SEE NOTE 3
TOP OF WALL EL 19.00
TOP OF WALL EL 19.00
CALERA CREEK "C" LINE
26.44'
18.39'
EMBANKMENT BACKFILL
OVERLAY EXIST SCSP WITH NEW SCSP AS NECESSARY TO MEET NEW INVERT ELEVATION
REMOVE DEBRIS/ MUD DEPOSITS
REMOVE EXIST SHOTCRETED SANDBAG LEVEE
VARIES FROM .5:1 OR FLATTER TO 1.25:1
VARIES FROM .5:1 OR FLATTER TO 1.25:1
3% MIN
3% MIN
19.75'
1.0'
REMOVE EXIST SHOTCRETED SANDBAG LEVEE
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 −1
−70 −65 −60 −55 −50 −45 −40 −35 −30 −25 −20 −15 −10 −5 0 5 10 15 20 25 30 35

B/15 SECTION @ STA. 2+37.00

"C" LINE



A/15 SECTION @ STA. 2+24.00

"C" LINE

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. 3' SCSP KEY CAN BE CUT SHORT AS NECESSARY TO CLEAR FIBER OPTIC CABLE.
2. THE WATER SURFACE ELEVATION IS BASED ON A HEC2 BACKWATER ANALYSIS ON BERRYESSA CREEK STARTING FROM THE 1% DESIGN ELEVATION OF 13.7 AT THE CONFLUENCE WITH LOWER PENITENCIA CREEK.
3. GRASS PLUGS PLANTING TO BE INSTALLED EVERY 18" ON CENTER IN BOTH DIRECTION. FOR LOCATIONS OF GRASS PLUGS PLANTING AREAS, SEE PLAN SHT 4 AND SPECIFICATIONS.

GORDON M. LAU
No. C 40080
EXP. 6/30/02

DATE
07/25/2000
DESIGN
TRI NGUYEN
R. AGREDA
DRAWN
R. AGREDA
CHECKED
G. LAU

Santa Clara Valley Water District

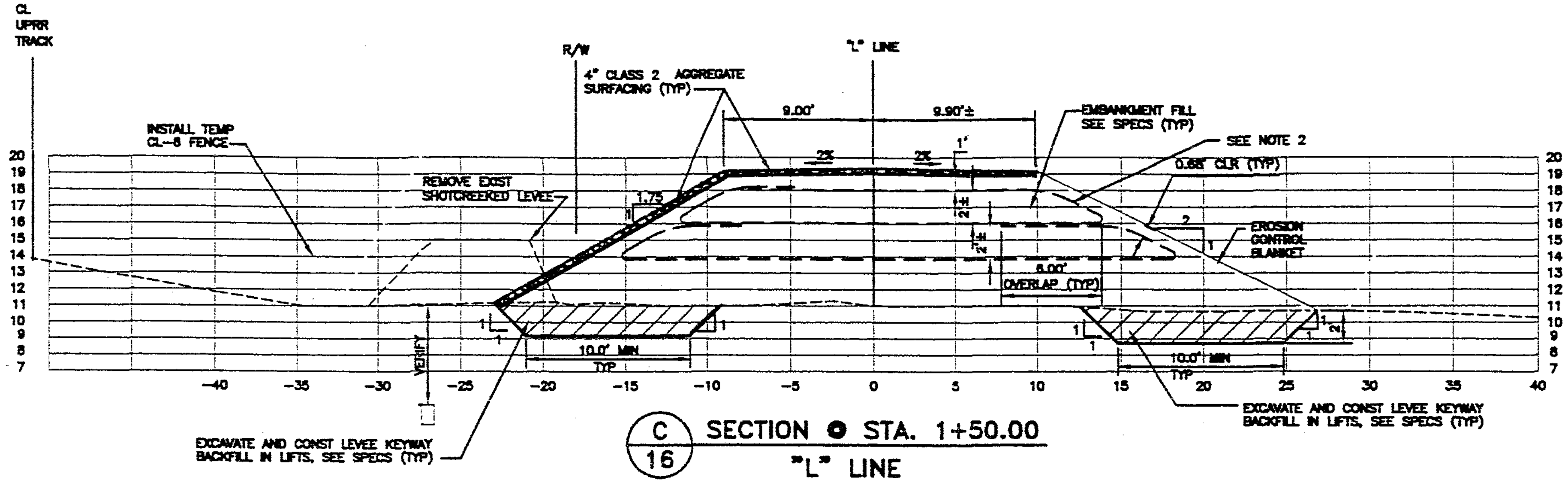
ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

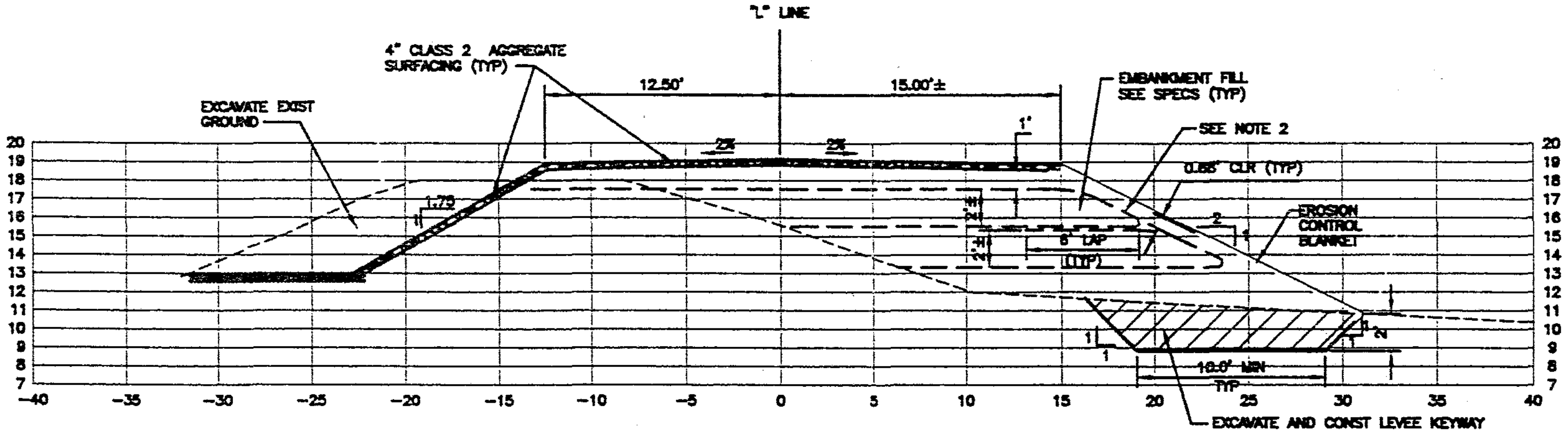
CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
CROSS-SECTIONS "C" LINE

SCALE
H: 1"=5'
V: 1"=5'

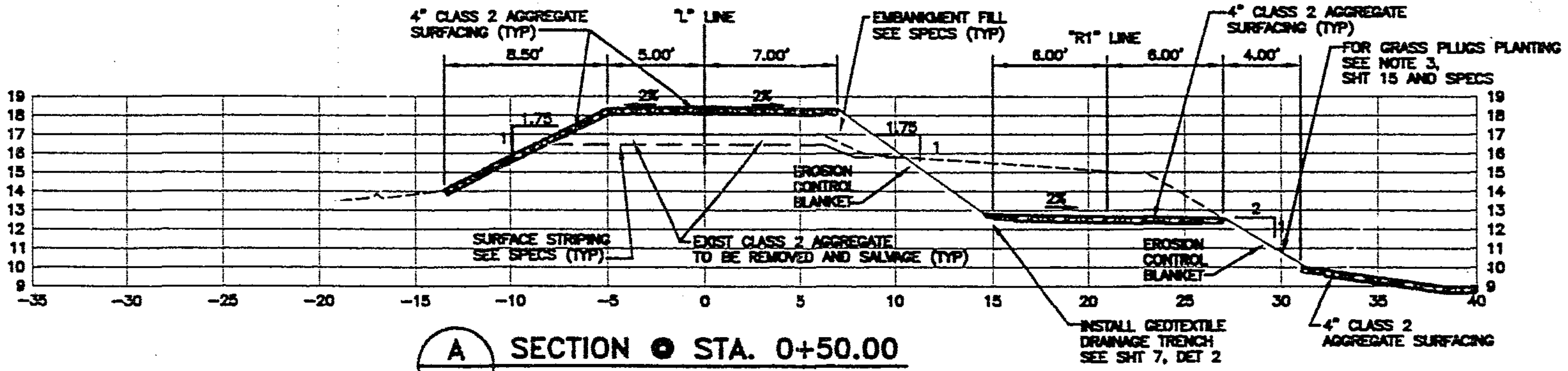
SHEET
15
OF 19



C
16
SECTION @ STA. 1+50.00
"L" LINE



B
16
SECTION @ STA. 1+27.00
"L" LINE


4" CLASS 2 AGGREGATE SURFACING (TYP)
"L" LINE
8.50'
5.00'
7.00'
2%
2%
1.75
1
EMBANKMENT FILL SEE SPECS (TYP)
"R1" LINE
6.00'
6.00'
4.00'
4" CLASS 2 AGGREGATE SURFACING (TYP)
FOR GRASS PLUGS PLANTING SEE NOTE 3, SHT 15 AND SPECS
EROSION CONTROL BLANKET
SURFACE STRIPING SEE SPECS (TYP)
EXIST CLASS 2 AGGREGATE TO BE REMOVED AND SALVAGE (TYP)
2
EROSION CONTROL BLANKET
INSTALL GEOTEXTILE DRAINAGE TRENCH SEE SHT 7, DET 2
4" CLASS 2 AGGREGATE SURFACING
-35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40
9 10 11 12 13 14 15 16 17 18 19

A
16
SECTION @ STA. 0+50.00
"L" LINE

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. LOW OVERHEAD POWER LINES. CONTRACTOR SHALL EXERCISE EXTREME CARE AND CAUTION WHEN WORKING UNDER OR ADJACENT TO THESE POWER LINES.
2. FOR GEOTEXTILE FABRIC MAT "GEO GRID" PLACEMENT LOCATION SEE SHT 4 AND SPECS.

GORDON M. LAU
No. C 40088
EXP. 6/30/02

DATE
07/25/2000
DESIGN
TRI NGUYEN
R. AGREDA
DRAWN
R. AGREDA
CHECKED
G. LAU

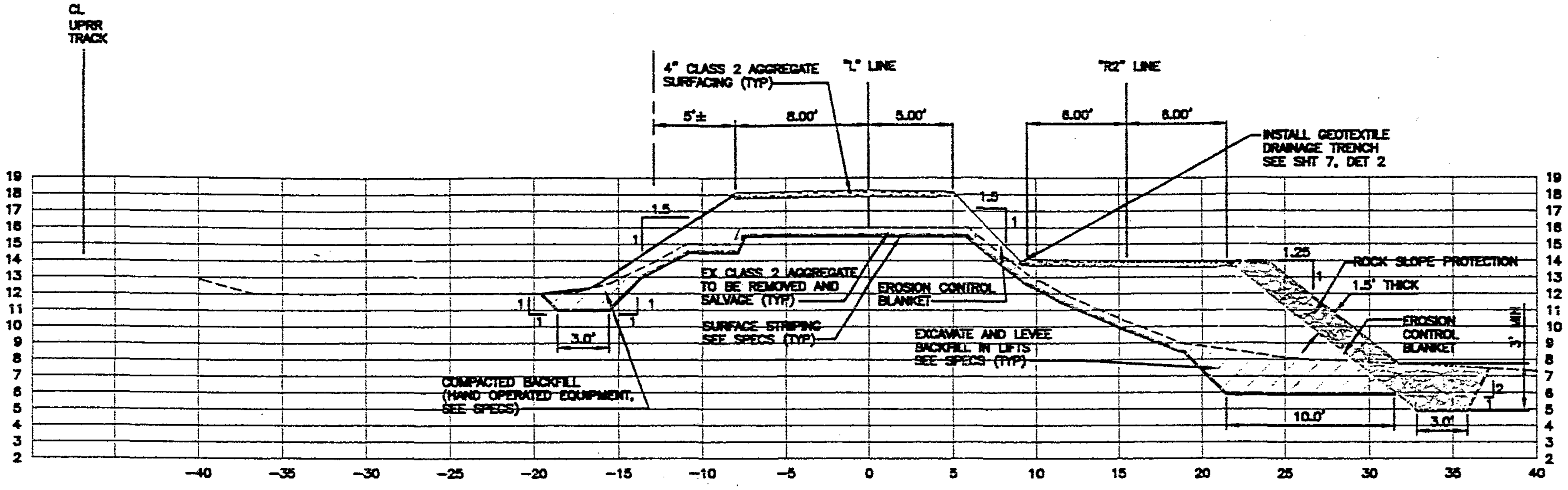
Santa Clara Valley Water District

ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

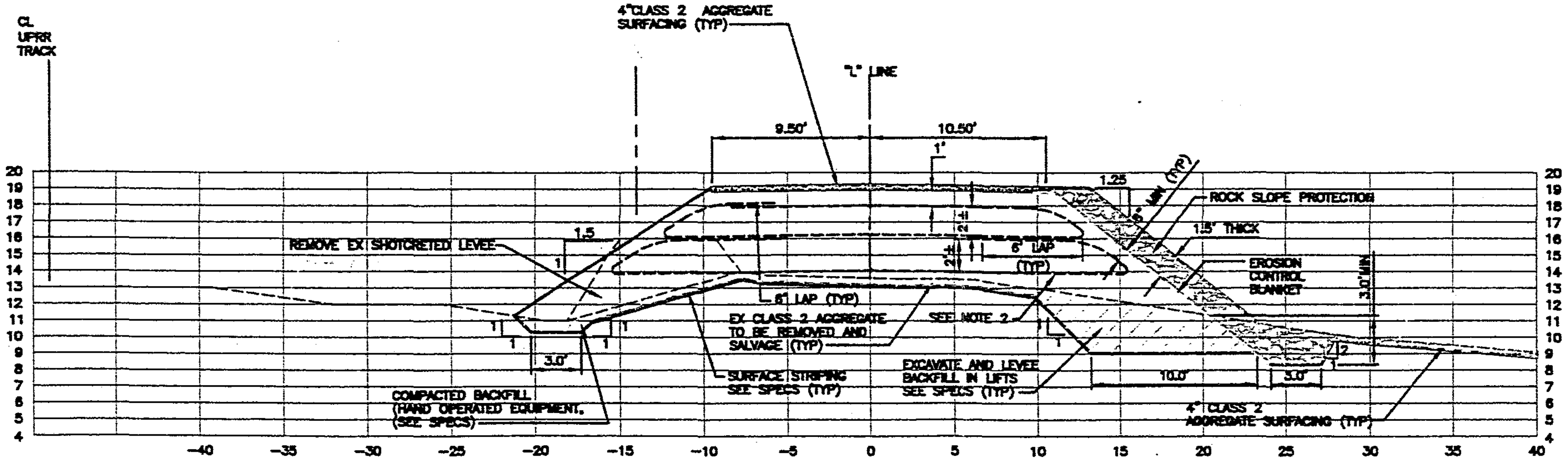
CALERA CREEK
CONSTRUCTION OF
FLOODWALLS AND ACCESS BRIDGE
CROSS-SECTIONS "L" LINE

SCALE
H: 1"=5'
V: 1"=5'
SHEET
16
OF 19


CL
UPRR
TRACK
4" CLASS 2 AGGREGATE SURFACING (TYP)
"L" LINE
"R2" LINE
5'±
8.00'
5.00'
6.00'
6.00'
INSTALL GEOTEXTILE DRAINAGE TRENCH SEE SHT 7, DET 2
1.5
1
1.25
ROCK SLOPE PROTECTION
1.5' THICK
EX CLASS 2 AGGREGATE TO BE REMOVED AND SALVAGE (TYP)
EROSION CONTROL BLANKET
SURFACE STRIPING SEE SPECS (TYP)
EXCAVATE AND LEVEE BACKFILL IN LIFTS SEE SPECS (TYP)
EROSION CONTROL BLANKET
3.0'
10.0'
2
COMPACTED BACKFILL (HAND OPERATED EQUIPMENT, SEE SPECS)
19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
−40 −35 −30 −25 −20 −15 −10 −5 0 5 10 15 20 25 30 35 40

B/17 SECTION @ STA. 3+00.00

"L" LINE


CL
UPRR
TRACK
4"CLASS 2 AGGREGATE SURFACING (TYP)
"L" LINE
9.50'
10.50'
1'
1.25
3' MIN (TYP)
ROCK SLOPE PROTECTION
1.5' THICK
1.5
1
REMOVE EX SHOTCRETED LEVEE
6" LAP (TYP)
6" LAP (TYP)
EROSION CONTROL BLANKET
3.0' MIN
EX CLASS 2 AGGREGATE TO BE REMOVED AND SALVAGE (TYP)
SEE NOTE 2
SURFACE STRIPING SEE SPECS (TYP)
EXCAVATE AND LEVEE BACKFILL IN LIFTS SEE SPECS (TYP)
3.0'
10.0'
2
COMPACTED BACKFILL (HAND OPERATED EQUIPMENT, (SEE SPECS)
4" CLASS 2 AGGREGATE SURFACING (TYP)
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4
−40 −35 −30 −25 −20 −15 −10 −5 0 5 10 15 20 25 30 35 40

A/17 SECTION @ STA. 2+26.00

"L" LINE

REV	DESCRIPTION	DATE	APPR

REFERENCE INFORMATION AND NOTES

1. LOW OVERHEAD POWER LINES. CONTRACTOR SHALL EXERCISE EXTREME CARE AND CAUTION WHEN WORKING UNDER OR ADJACENT TO THESE POWER LINES.
2. FOR GEOTEXTILE FABRIC MAT "GEO GRID" PLACEMENT, SEE SHT 4 AND SPECS.

DATE 07/25/2000
DESIGN TRI NGUYEN R. AGREDA
DRAWN R. AGREDA
CHECKED G. LAU

Santa Clara Valley Water District

ENGINEERING CERTIFICATION

ENGINEERING APPROVAL

CALERA CREEK
CONSTRUCTION OF FLOODWALLS AND ACCESS BRIDGE
CROSS-SECTIONS "L" LINE

SCALE
H: 1"=5'
V: 1"=5'

SHEET
17
OF 19

APPENDIX E
Union Pacific Railroad Company—Drainage Facility and Waterway Agreement

AUDIT 213629

DRAIN.DOC 920301
Form Approved, AVP-Law

Folder No: 01809-21

DRAINAGE FACILITY & WATERWAY AGREEMENT

Mile Post: 009.650, Milpitas Subdivision/Branch
Location: Milpitas, Santa Clara County, California

THIS AGREEMENT is made and entered into as of December 9, 1999, by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation (hereinafter the "Licensor"), and **SANTA CLARA VALLEY WATER DISTRICT**, a California corporation, to be addressed at 5750 Almaden Expressway, San Jose, California 95118 (hereinafter the "Licensee").

RECITALS:

In order to improve drainage conditions the Licensee desires to construct a drainage facility in the vicinity of Licensor's right of way at Mile Post 009.650 on the Milpitas Subdivision/Branch, located at or near Milpitas, Santa Clara County, California (hereinafter the "Premises").

The drainage facilities to be constructed by the Licensee, at Licensee's expense, on the Premises are hereinafter collectively referred to as the "Drainage Facility". The Drainage Facility and Premises are shown on the print dated September 17, 1999, marked Exhibit "A", hereto attached.

The Railroad is agreeable to the Licensee constructing, maintaining and using the Drainage Facility upon the terms and conditions set forth herein.

AGREEMENT:

NOW, THEREFORE, IT IS MUTUALLY AGREED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

Article I. LICENSOR GRANTS RIGHT.

In consideration of the License Fee to be paid by the Licensee and in further consideration of the covenants and agreements herein contained to be by the Licensee kept, observed and performed, the Licensor hereby grants to the Licensee the right to construct and thereafter, during the term hereof, to maintain and use the Drainage Facility.

Article II. LICENSE FEE.

Upon execution and delivery of this Agreement, the Licensee shall pay to the Licensor a one-time License Fee of **ONE THOUSAND FIVE HUNDRED DOLLARS ($1,500.00)**.

Article III. CONSTRUCTION WORK TO BE PERFORMED BY LICENSEE.

The Licensee, at its sole expense, shall construct the Drainage Facility and perform the work described in the Recitals above and/or described in Exhibit "A".

Article IV. CONSTRUCTION, MAINTENANCE AND OPERATION.

The grant of right herein made to the Licensee is subject to each and all of the terms, provisions, conditions, limitations and covenants set forth herein and in Exhibit B, hereto attached.

Article V. DEFERRED CONSTRUCTION.

The Licensor and Licensee acknowledge that conditions inherent in the Drainage Facility may cause the complete stabilization of Licensor's trackage supported by new cuts or fills to be deferred beyond the construction period, and that Licensor's operation over the roadbed during the seasoning period will impose extraordinary maintenance costs in the event of caving, sliding, slipping, sinking or settling, including damage to rip-rapping or protective work in connection therewith, as well as settlement and consolidation of tracks and ballast, until the seasoning period is complete. Therefore, the Licensee will pay to the Licensor, as a part of the consideration for this Agreement, all that part of the cost and expense of extraordinary maintenance (hereinafter referred to as "Deferred Construction") associated with the Drainage Facility which can be attributed to failure of subgrade, settlement, and consolidation of subballast, or roadbed, or any combination thereof, which are incurred during the period commencing immediately following completion of the work on the Drainage Facility by the Licensee or its contractor and ending five years thereafter. The Deferred Construction costs aforesaid shall include reimbursement of the extra cost, in excess of normal maintenance costs, of maintaining embankments and that portion of said tracks above subgrade in accordance with acceptable maintenance standards, and will include cost of maintaining proper alignment, proper surface and use of ballast and other necessary materials. The work of such Deferred Construction shall normally be performed by the Licensor either with its own forces or through responsible contractors employed by Licensor. In the event major construction is required for Deferred Construction, the Licensee, at its expense, may accomplish such major items by contract, subject to approval and inspection by the Licensor. Except in cases where the continuity of train service is involved or threatened, the Licensor shall submit to the Licensee plans, specifications and estimates for such Deferred Construction work and shall not commence such work until the plans, specifications, and estimates for such work have been approved by the Licensee. The Licensor shall furnish to the Licensee quarterly estimates of costs of Deferred Construction thirty (30) days prior to the beginning of each quarter. The Licensee shall reimburse the Licensor, as provided herein, upon receipt of properly certified invoices, in quadruplicate, supported by such reasonable evidence as may be required by the Licensee. The Licensor will accomplish the final work of Deferred Construction within one year after termination of the five-year period above defined. Bills for reimbursement shall be rendered by the Licensor at intervals not more frequently than monthly and not less frequently than quarterly.

Article VI. TERM; TERMINATION.

A. This Agreement shall take effect as of the date first herein written and, unless sooner terminated as set forth in Paragraphs (B) and (C) below, shall continue in full force and effect for so long as the Premises and Drainage Facility shall be used by the Licensee for the purposes set forth herein; provided, however, that if the Licensee shall abandon the use of the Drainage Facility and Premises, or any part thereof, for such purposes, this Agreement and the rights and privileges granted to Licensee herein as to the portion(s) so abandoned shall cease and terminate at the time such portions of the Drainage Facility and Premises are abandoned.

B. If the Licensee continues in default in the performance of any covenant or agreement herein contained for a period of thirty (30) days after written notice from the Licensor to the Licensee specifying such default, the Licensor may, at its option, forthwith and immediately terminate this Agreement by written notice to Licensee.

C. This Agreement may be terminated by either party, with or without cause, upon six (6) months written notice to the other party. In the event of such notice of termination, the parties shall arrange for either the Drainage Facility to be removed, filled in and graded to accommodate the surrounding grade surface, or to encase the Drainage Facility to the standards and satisfaction of the Licensor.

D. Notice of default and notice of termination may be served personally upon the Licensee or by mailing to the last known address of the Licensee. Termination of this Agreement for any reason shall not affect any of the rights or obligations of the parties hereto which may have accrued, or liabilities, accrued or otherwise, which may have arisen prior thereto.

Article VII. IF WORK IS TO BE PERFORMED BY CONTRACTOR.

If a contractor is to do any of the work performed on the Drainage Facility or Premises (including initial construction and subsequent relocation or substantial maintenance and repair work), then the Licensee shall require its contractor to execute the Railroad's Contractor's Right of Entry Agreement. Licensee acknowledges receipt of a copy of the Contractor's Right of Entry Agreement and understanding of its terms, provisions, and requirements, and will inform its contractor of the need to execute the Agreement. Under no circumstances will Licensee's contractor be allowed onto Licensor's Premises without first executing the Contractor's Right of Entry Agreement.

Article VIII. INSURANCE.

A. The Licensee, at its expense, shall obtain the insurance described in Exhibit B-1, hereto attached. The Licensee will also provide to the Licensor a Certificate of Insurance issued by its insurance carrier confirming the existence of such insurance and that the policy or policies contain the following endorsement:

> Union Pacific Railroad Company is named as an additional insured with respect to all liabilities arising out of the existence, use or any work performed on or associated with the Drainage Facility located on Railroad's right of way at Mile Post 009.650 on the Milpitas Subdivision/Branch, at or near Milpitas, Santa Clara County, California.

B. If the Licensee named in this Agreement is a public entity subject to any applicable statutory tort laws, the limits of insurance described in Exhibit B-1 shall be the limits the Licensee then has in effect or which is required by applicable current or subsequent law, whichever is greater, a portion of which may be self-insured with the consent and approval of the Licensor.

C. All insurance correspondence shall be directed to:

Folder No.: 01809-21
Director-Contracts
Union Pacific Railroad Company
Real Estate Department
1800 Farnam Street
Omaha, Nebraska 68102

Article IX. **SPECIAL PROVISIONS.**

None.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date first herein written.

UNION PACIFIC RAILROAD COMPANY

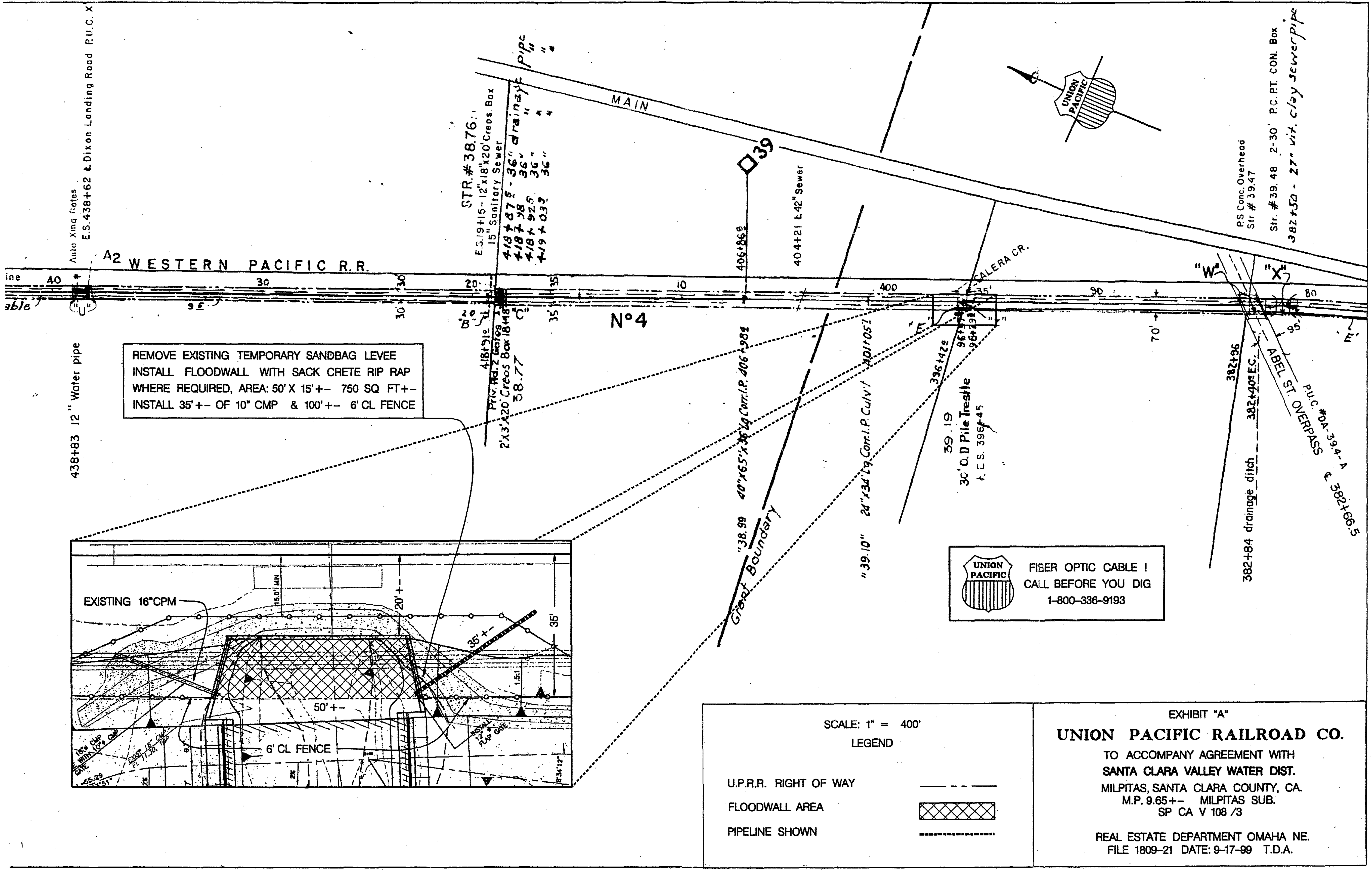
By: Mary Haunhold
Contracts Representative

WITNESS

x Karen Uyeda

SANTA CLARA VALLEY WATER DISTRICT

x
Title Sr. Project Manager.



REMOVE EXISTING TEMPORARY SANDBAG LEVEE
INSTALL FLOODWALL WITH SACK CRETE RIP RAP
WHERE REQUIRED, AREA: 50' X 15'+- 750 SQ FT+-
INSTALL 35'+- OF 10" CMP & 100'+- 6' CL FENCE

UNION PACIFIC

FIBER OPTIC CABLE !
CALL BEFORE YOU DIG
1-800-336-9193

SCALE: 1" = 400'

LEGEND

U.P.R.R. RIGHT OF WAY	— - - —
FLOODWALL AREA	▨
PIPELINE SHOWN	┅┅┅

EXHIBIT "A"

UNION PACIFIC RAILROAD CO.

TO ACCOMPANY AGREEMENT WITH
SANTA CLARA VALLEY WATER DIST.
MILPITAS, SANTA CLARA COUNTY, CA.
M.P. 9.65+- MILPITAS SUB.
SP CA V 108 /3

REAL ESTATE DEPARTMENT OMAHA NE.
FILE 1809-21 DATE: 9-17-99 T.D.A.

Drainage Exhibit B 920301
Form Approved, AVP-Law

EXHIBIT B

Section 1. LIMITATION AND SUBORDINATION OF RIGHTS GRANTED.

(a) The foregoing grant of right is subject and subordinate to the prior and continuing right and obligation of the Licensor to use and maintain its entire property including the right and power of the Licensor to construct, maintain, repair, renew, use, operate, change, modify or relocate railroad tracks, signal, communication, fiber optics, or other wirelines, pipelines and other facilities upon, along or across any or all parts of its property, all or any of which may be freely done at any time or times by the Licensor without liability to the Licensee or to any other party for compensation or damages.

(b) The foregoing grant is also subject to all outstanding superior rights (including those in favor of licensees and lessees of the Licensor's property, and others) and the right of the Licensor to renew and extend the same, and is made without covenant of title or for quiet enjoyment. It shall be Licensee's sole obligation to obtain such additional permission, license and grants necessary on account of any such existing rights.

Section 2. CONSTRUCTION, MAINTENANCE AND OPERATION.

(a) The Licensee shall submit the design of the Drainage Facility to the Licensor for Licensor's prior approval. All work performed on property of the Licensor in connection with the construction, maintenance, repair, renewal, modification or reconstruction of the Drainage Facility shall be done to the satisfaction of the Licensor and in substantial conformance to the specifications, notes and cross sections shown on Exhibit A.

(b) The Licensee, at its sole expense, shall operate, maintain and use the Drainage Facility in a good and safe condition and shall keep the Drainage Facility free and clear of debris, sediment or obstructive matter which may or could interfere with or impede the proper functioning of the Drainage Facility.

(c) The Licensee shall not cross any trackage of Licensor with any vehicles except at existing, open public crossings. The Drainage Facility shall be installed by an approved method of construction, or if by the jacking and boring method, during jacking operations, the Licensee agrees to fill voids created between the embankment and pipe by pressure grouting. The Licensee shall provide adequate barrier protection around the entire excavation area.

(d) During the performance of excavating, constructing and maintaining the Drainage Facility, or any part thereof, the Licensee shall not excavate near the toe of the track embankment of the trackbed and will protect the trackbed in the design, construction and maintenance of the Drainage Facility. In the event of any settlement of the Licensor's embankment caused by excavation of the Drainage Facility, the Licensee, at its sole expense, shall restore Licensor's embankment to its proper grade and dimensions.

(e) Prior to the commencement of any work in connection with the construction, maintenance, repair, renewal, modification, relocation, reconstruction or removal of the Drainage Facility where it passes underneath the roadbed and track or tracks of the Licensor, the Licensee shall submit to the Licensor plans setting out the method and manner of handling the work, including the shoring and cribbing, if any, required to protect the Licensor's operations, and shall not proceed with the work until such plans have been approved by the Vice President-Engineering Services of the Licensor and then the work shall be done to the satisfaction of the Vice President-Engineering Services or his authorized representative. The Licensor shall have the right, if it so elects, to provide such support as it may deem necessary for the safety of its track or tracks during the time of construction, maintenance, repair, renewal, modification, relocation, reconstruction or removal of the Drainage Facility, and, in the event the Licensor provides such support, the Licensee shall pay to the Licensor, within fifteen (15) days after bills shall have been rendered therefor, all expense incurred by the Licensor in connection therewith, which expense shall include all assignable costs.

Section 3. NOTICE OF COMMENCEMENT OF WORK.

If an emergency should arise requiring immediate attention, the Licensee shall provide as much notice as practicable to Licensor before commencing any work. In all other situations, the Licensee shall notify the Licensor at least ten (10) days (or such other time as the Licensor may allow) in advance of the commencement of any work upon property of the Licensor in connection with the construction, maintenance, repair, renewal, modification, reconstruction, relocation or removal of the Drainage Facility. All such work shall be prosecuted diligently to completion.

Section 4. LICENSEE TO BEAR ENTIRE EXPENSE.

The Licensee shall bear the entire cost and expense incurred in connection with the construction, maintenance, repair and renewal and any and all modification, revision, relocation, removal or reconstruction of the Drainage Facility, including any and all expense which may be incurred by the Licensor in connection therewith for inspection, flagging, or otherwise.

Section 5. REINFORCEMENT, RELOCATION OR REMOVAL OF DRAINAGE FACILITY.

(a) The license herein granted is subject to the needs and requirements of the Licensor in the operation of its railroad and in the improvement and use of its property, and the Licensee shall, at the sole expense of the Licensee, reinforce or encase the Drainage Facility, or move all or any portion of the Drainage Facility to such new location, as the Licensor may designate, whenever, in the furtherance of its needs and requirements, the Licensor shall find such action necessary or desirable.

(b) All the terms, conditions and stipulations herein expressed with reference to the Drainage Facility on property of the Licensor in the location hereinbefore described shall, so far as the Drainage Facility remains on the property, apply to the Drainage Facility as modified, changed or relocated within the contemplation of this section.

Section 6. NO INTERFERENCE WITH LICENSOR'S OPERATION.

The Drainage Facility and all parts thereof within and outside of the limits of the property of the Licensor shall be constructed and, at all times, maintained, repaired, renewed and operated in such manner as to cause no interference whatsoever with the constant, continuous and uninterrupted use of the tracks, property and facilities of the Licensor, and nothing shall be done or suffered to be done by the Licensee at any time that would in any manner impair the safety thereof.

Section 7. PROTECTION OF FIBER OPTIC CABLE SYSTEMS.

(a) Fiber optic cable systems may be buried on the Licensor's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. Licensee shall telephone the Licensor at 1-800-336-9193 (a 24-hour number) to determine if fiber optic cable is buried anywhere on the Licensor's premises to be used by the Licensee. If it is, Licensee will telephone the telecommunications company(ies) involved, arrange for a cable locator, make arrangements for relocation or other protection of the fiber optic cable, and will commence no work on the right of way until all such protection or relocation has been accomplished.

(b) In addition to other indemnity provisions in this Agreement, the Licensee shall indemnify and hold the Licensor harmless from and against all costs, liability and expense whatsoever (including, without limitation, attorneys' fees, court costs and expenses) arising out of any act or omission of the Licensee, its contractor, agents and/or employees, that causes or contributes to (1) any damage to or destruction of any telecommunications system on Licensor's property, and (2) any injury to or death of any person employed by or on behalf of any telecommunications company, and/or its contractor, agents and/or employees, on Licensor's property. Licensee shall not have or seek recourse against Licensor for any claim or cause of action for alleged loss of profits or revenue or loss of service or other consequential damage to a telecommunication company using Licensor's property or a customer or user of services of the fiber optic cable on Licensor's property.

Section 8. CLAIMS AND LIENS FOR LABOR AND MATERIAL; TAXES.

(a) The Licensee shall fully pay for all materials joined or affixed to and labor performed upon property of the Licensor in connection with the construction, maintenance, repair, renewal, modification or reconstruction of the Drainage Facility, and shall not permit or suffer any mechanic's or materialman's lien of any kind or nature to be enforced against the property for any work done or materials furnished thereon at the instance or request or on behalf of the Licensee. The Licensee shall indemnify and hold harmless the Licensor against and from any and all liens, claims, demands, costs and expenses of whatsoever nature in any way connected with or growing out of such work done, labor performed, or materials furnished.

(b) The Licensee shall promptly pay or discharge all taxes, charges and assessments levied upon, in respect to, or on account of the Drainage Facility, to prevent the same from becoming a charge or lien upon property of the Licensor, and so that the taxes, charges and assessments levied upon or in respect to such property shall not be increased because of the location, construction or maintenance of the Drainage Facility or any improvement, appliance or fixture connected therewith placed upon such property, or on account of the Licensee's interest therein. Where such tax, charge or assessment may not be separately made or assessed to the Licensee but shall be included in the assessment of the property of the Licensor, then the Licensee shall pay to the Licensor an equitable proportion of such taxes determined by the value of the Licensee's property upon property of the Licensor as compared with the entire value of such property.

Section 9. RESTORATION OF LICENSOR'S PROPERTY.

In the event the Licensor authorizes the Licensee to take down any fence of the Licensor or in any manner move or disturb any of the other property of the Licensor in connection with the construction, maintenance, repair, renewal, modification, reconstruction, relocation or removal of the Drainage Facility, then in that event the Licensee shall, as soon as possible and at Licensee's sole expense, restore such fence and other property to the same condition as the same were in before such fence was taken down or such other property was moved or disturbed, and the Licensee shall indemnify and hold harmless the Licensor, its officers, agents and employees, against and from any and all liability, loss, damages, claims, demands, costs and expenses of whatsoever nature, including court costs and attorneys' fees, which may result from injury to or death of persons whomsoever, or damage to or loss or destruction of property whatsoever, when such injury, death, damage, loss or destruction grows out of or arises from the taking down of any fence or the moving or disturbance of any other property of the Licensor.

Section 10. INDEMNITY.

(a) As used in this Section, "Licensor" includes other railroad companies using the Licensor's property at or near the location of the Licensee's installation and their officers, agents, and employees; "Loss" includes loss, damage, claims, demands, actions, causes of action, penalties, costs, and expenses of whatsoever nature, including court costs and attorneys' fees, which may result from: (a) injury to or death of persons whomsoever (including the Licensor's officers, agents, and employees, the Licensee's officers, agents, and employees, as well as any other person); and (b) damage to or loss or destruction of property whatsoever (including Licensee's property and adjacent property and crops, damage to the roadbed, tracks, equipment, or other property of the Licensor, or property in its care or custody).

(b) To the extent it may lawfully do so, the Licensee agrees to assume the risk of loss or damage to the Drainage Facility and to indemnify and hold harmless the Licensor from any Loss which is due to or arises from (i) the installation, construction, maintenance, repair, reconstruction, removal, use or existence of the Drainage Facility and appurtenances thereto, or any part thereof, including any break in the Drainage Facility wall or structure or any leakage, flow of water or flooding from the Drainage Facility, or (ii) Licensee's failure to comply with or perform any of the terms and conditions set forth in this Agreement, except to the extent that the Loss is caused by the sole and direct negligence of the Licensor; provided, however, that the foregoing indemnification provisions shall not apply to any claims, damages, costs and expenses that have been fully compensated for through the insurance required of Licensee in Exhibit B-1, or required of Licensee's contractor under the separate Contractor's Right of Entry Agreement.

(c) Any liability of either party hereunder to one of its employees under any Workers' Compensation Act or the Federal Employers' Liability Act shall not be questioned or in any way challenged by the other party, nor shall any jury or court findings, resulting from any employee's suit against either party pursuant to any such Act(s), be relied upon or used by either party in any attempt to assert common law liability against the other.

Section 11. WAIVER OF BREACH.

The waiver by the Licensor of the breach of any condition, covenant or agreement herein contained to be kept, observed and performed by the Licensee shall in no way impair the right of the Licensor to avail itself of any remedy for any subsequent breach thereof.

Section 12. AGREEMENT NOT TO BE ASSIGNED.

The Licensee shall not assign this Agreement, in whole or in part, or any rights herein granted, without the written consent of the Licensor, and it is agreed that any transfer or assignment or attempted transfer or assignment of this Agreement or any of the rights herein granted, whether voluntary, by operation of law, or otherwise, without such consent in writing, shall be absolutely void and, at the option of the Licensor, shall terminate this Agreement.

Section 13. SUCCESSORS AND ASSIGNS.

Subject to the provisions of Section 12 hereof, this Agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns.

EXHIBIT B-1

Drainage Facility and Waterway
Insurance Requirements

The Licensee, at its own sole cost and expense, shall procure the insurance described in paragraphs A, B and C below and shall keep such insurance in force and effect during the life of this Agreement. The Licensee (or its contractor), at the sole cost and expense of the Licensee or its contractor, shall keep the Railroad Protective Insurance described in Paragraph D below in force and effect during the duration of any construction or major maintenance, repair, reconstruction, relocation or removal work involving the Drainage Facility.

A. General Public Liability insurance providing bodily injury, including death, personal injury and property damage coverage with a combined single limit of at least $2,000,000 each occurrence or claim and a general aggregate limit of at least $4,000,000. This insurance shall provide Broad Form Contractual Liability covering the indemnity provisions contained in this Agreement, Underground Hazard, Products-Completed Operations with products-completed operation aggregate of at least $2,000,000, a separate general aggregate for the project (ISO Form CG 25 03 or equivalent), Broad Form Property Damage, a waiver of governmental immunity (ISO Form CG 25 04 or equivalent) severability of interests and name Licensor as an additional insured with respect to all liabilities arising out of Licensee's obligation to Licensor in the Agreement. Coverage purchased on a claims made form shall provide for at least a three (3) year extended reporting or discovery period if (a) the coverage is changed from a claims made form to an occurrence form, (b) there is a lapse/cancellation of coverage, or (c) the succeeding claims made policy retroactive date is different from the expiring policy.

B. Automobile Public Liability insurance providing bodily injury and property damage with a combined single limit of at least $2,000,000 each occurrence or claim. This insurance shall provide contractual liability by endorsement ISO Form CA 00 25 or equivalent covering all motor vehicles including hired and non-owned, mobile equipment to the extent it may be excluded from general liability insurance, severability of interests and name Licensor as an additional insured with respect to all liabilities arising out of Licensee's obligation to Licensor in the Agreement.

C. Worker's Compensation insurance covering the statutory liability as determined by the compensation laws of the state(s) affected by this Agreement and Employers' Liability. Also compliance with all laws of states which require participation in their state workers' compensation fund.

D. Railroad Protective Liability insurance naming Licensor and any railroad operating over its tracks as insured with a combined single limit of $2,000,000 per occurrence with a $6,000,000 aggregate. The policy form shall be AAR-AASHTO with broad form coverage for "Physical Damage to Property" (ISO Form GL 00 30) or as revised ISO-RIMA (Form CG 00 35) and include pollution arising out of fuels and lubricants brought to the job site (ISO Form CG 28 31 or equivalent). If the Lloyd's London policy form is used, limits shall be $3,000,000 per occurrence with a $9,000,000 aggregate and the Extended Claims Made Date shall be determined by adding the length of the original policy period plus one year to the policy expiration date.

The Licensee hereby waives its right to subrogation, as respects the above insurance policy(ies), against Licensor for payments made to or on behalf of employees of Licensee or its agents and for loss of its owned or leased property or property under its care, custody and control while on or near Licensor's right-of-way or other real property. Licensee's insurance shall be primary with respect to any insurance carried by Licensor.

Licensee shall furnish to Licensor certificate(s) of insurance evidencing the required coverage and endorsement(s) and upon request a certified duplicate original of any of those policies. The insurance company(ies) issuing such policy(ies) shall notify Licensor in writing of any material alteration including any change in the retroactive date in any "claims-made" policies or substantial reduction of aggregate limits, if such limits apply, or cancellation thereof at least thirty (30) days prior thereto.
The insurance policy(ies) shall be written by a reputable insurance company or companies acceptable to Licensor or with a current Best's Insurance Guide Rating of B and Class VII or better. Such insurance company shall be authorized to transact business in the state(s) affected by this Agreement.